

# **GRAPHIC PAINTBOX 2**

## **FUNDAMENTALS**

### **Operating Software V4**

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# Graphic Paintbox 2

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REV	DATE	ECO	COMMENTS	REVISED PAGES
A	10/98	E22166	V4	All pages

This manual was written and produced by the Quantel Technical Publications Department.

Chapter	Pages	Chapter	Pages
G2570011 A	16	G257A011 A	16
G2571011 A	22	G257X011 A	12
G2572011 A	88	G257Z011 A	1
G2573011 A	32		
G2574011 A	26		
G2575011 A	48		
G2576011 A	24	G2570011.A	285

## ABOUT THIS MANUAL

Because the operation of this product is totally unrestrictive, but uses a formal menu hierarchy to group individual function, many of the system's powerful features can not be allied within the documentation package to specific menu functions. Therefore this manual is intended as a topic-by-topic description of the product's operation, making reference to other topics and the appropriate areas of menu operation. This manual should therefore be used in conjunction with the "Menu Reference" manual.

### CHAPTER 1 : BASIC OPERATION

This chapter details the basic operation of the system's control station and its component parts; the Tablet, pen, Grip, keyboard and the on-screen menus and palette.

### CHAPTER 2: TOPICS A - E

This chapter details the following topic areas:

*Black, Brushes, CMYK Overview, Colour Correction, Colour Control, Colour Curves, Colour Effects, Colour Space, Connectivity, Copy, Current Item and Cutouts.*

### CHAPTER 3: TOPICS F - J

This chapter details the following topic areas:

*Fonts, Graphics, Green Menu Boxes, Grids and Jobs & Page Setup.*

### CHAPTER 4: TOPICS K - O

This chapter details the following topic areas:

*Library, Loading New Software, Masks and On-screen Keypad.*

### CHAPTER 5: TOPICS P - T

This chapter details the following topic areas:

*Painting, Palette, Pasteup 3D, Print Controls, Restore, RGB In, Roller Bar/Menu, Sequence, Statistics and Swap.*

# ***Graphic Paintbox 2***

## **CHAPTER 6: TOPICS U - Z**

This chapter details the following topic areas:

*User Preferences, Warp and Zoom.*

## **APPENDIX A: GLOSSARY**

This appendix provides a glossary of terms used within the documentation.

## **NOTICES**

### **TRADE MARKS**

Most of the product names mentioned in this manual are manufacturer trade marks and are used within this manual only for the purpose of identification.

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### **DRAWINGS & ILLUSTRATIONS**


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### **MAINTENANCE**

Maintenance and Servicing of this equipment should only be carried out by qualified service personnel.

# Graphic Paintbox 2

## CONVENTIONS USED

 **WARNING:** Indicate danger to life and limb if the indicated statements are ignored, or the indicated procedures are not performed correctly.

 **Cautions:** Indicate possible damage to (or misalignment of) the equipment if the indicated statements are ignored, or the indicated procedures are not performed correctly.

Numbers which appear after either the word '**WARNING**' or '**Caution**' (for example; **WARNING 12**), and dates which appear at the end of either of these items (in the format **(05/98)** for example), are for Quantel internal reference only.



*Refer as indicated to the Fundamentals volume of this manual set*



*Refer as indicated to the Menu Reference volume of this manual set*

*Text*

Text in this font and style indicates a reference to another section of this Manual, or a section of another Manual in this set.

<TEXT>

Text in these brackets represents a key press on the Keyboard.

NN

This indicates a value entered on the numeric keypads.

*Text*

Text in italics represents a menu function or option. Main menu items are shown in capitalised italics and sub menu functions are given in lower-case italics.

**Note:**

Appears before information which is of special significance to the current function.

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# **CHAPTER 1**

## **BASIC OPERATION**

# ***Graphic Paintbox 2***

## GRAPHIC PAINTBOX

### Introduction

Quantel's Graphic Paintbox 2 offers artists and designers total imaginative freedom in the creation, retouching and assembly of colour images.

This dedicated workstation is a professional tool but requires only minimal knowledge of computer graphics techniques. It has been carefully engineered to make use of the designers traditional skills while removing many of the tedious and time consuming mechanical chores associated with them.

Using just the electronic pen and touch Tablet in conjunction with a high resolution monitor, artists have at their disposal all the creative facilities that are found in a conventional graphic studio as well as many that were previously the exclusive domain of the repro and retouching houses. Menu functions are selected from a 'head-up' menu display which appears on the monitor.

The system imposes no limitations on the user, nor does it impose a character of its own on the finished result, so the style of completed artwork is entirely that of the artist or designer.

With the extensive range of artistic tools available (*paint, chalk, airbrush, custom brush, wash* and *masks* are just some examples), the artist using the Graphic Paintbox 2 can achieve the desired effect, whether it be perfect realism in retouching or free artistic expression. Line quality is extremely natural and displays none of the rigid, mechanical characteristics sometimes associated with electronic graphics devices.

Images are processed instantly at full resolution as the artist works on them. There is no post processing.

# Graphic Paintbox 2

## A SYSTEM FEATURES (ENTRY LEVEL MODEL)

- 1 Graphic Paintbox 2 is capable of handling 20 million pixels and has a definable canvas which allows any rectangular shape up to 8,000 pixels either horizontally or vertically.
- 2 There are 4 Gigabytes of storage as standard on the system's internal disk.
- 3 The system offers full perspective manipulation in real-time on all files, no matter what size. Cutouts can be magnified, rotated and distorted at will.
- 4 At all times, Graphic Paintbox 2 has an active data plane which can be switched to instantly colour correct and manipulate. This layer can be positioned anywhere in the framestore and restored through as required.
- 5 The automask feature offers an extremely versatile luma/chroma key with unrivalled accuracy for real-time creation of masks.
- 6 RGB images are accepted on input as Tiff files in a variety of formats. Planar Tiff's are also accepted from digital cameras. RGB files can be imported with a *for cmyk* lookup table (LUT) if the image is to be printed. On output, RGB Tiff's are also allowed.
- 7 Network compatibility features have been built into the system to allow files to be recognised on the network directly from Graphic Paintbox's multi-access disk.

## **B      SYSTEM OPTIONS**

- 1      The large 10 by 8 format option gives Graphic Paintbox 2 the ability to handle an image such as a 10" by 8" transparency, pixel for pixel at 1000 dpi. With such a large framestore, Graphic Paintbox 2 has multiple active layers - as many as 80 million pixels worth of active layering, handled in real-time.
- 2      An additional 12 Gbytes of storage can be added to standard 4 Gbytes, making a total of 16 Gbytes.
- 3      Graphic Paintbox 2 can be supplied with a monitor but as it will accept most monitor types the user is free to source their own from a third party vendor.
- 4      The CMYK option provides a choice of two routes for CMYK data entering or leaving Graphic Paintbox 2. These choices are either CMY with K split off into a separate channel (as with Classic Graphic Paintbox), or full CMYK in and out. The CMYK colour card is controlled by hardware and is capable of interpolation that offers complete control over input and output cmyk condition. Print controls are accessed from the workstation and Print Control Tables (PCT's) can be saved to the system's *Library* for instant recall.

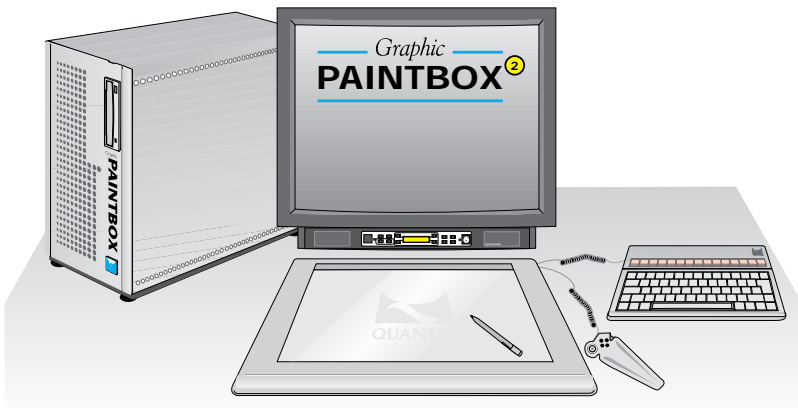
# ***Graphic Paintbox 2***

# THE CONTROL SYSTEM

## THE CONTROL SYSTEM

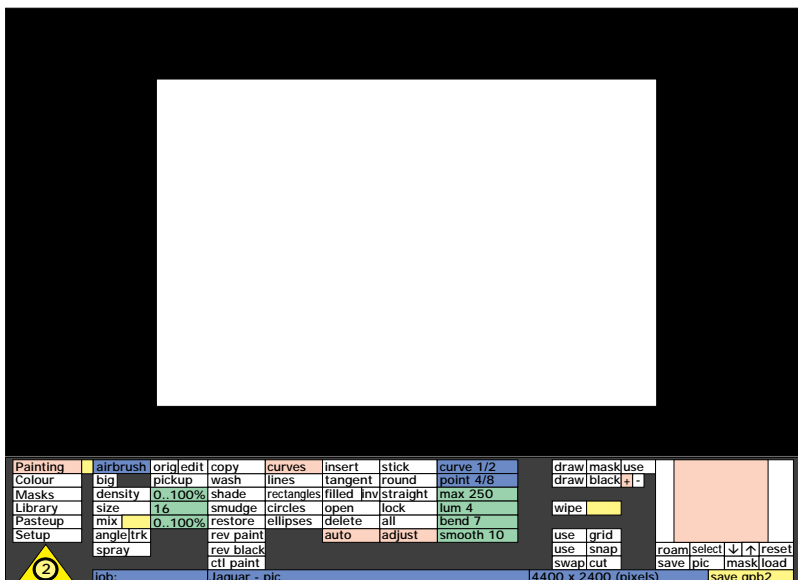
### Description

The system's control station consists of a digitising Tablet, a pressure sensitive pen, a conventional typewriter-style keyboard and a Hand Unit, known as the 'Grip'. These, in conjunction with a single video output for monitoring, are all the controls necessary to drive the system.



# Graphic Paintbox 2

When switched on, the system displays a dark screen for about two minutes while the disks run up to speed and the machine is set-up. This is then replaced by the main operational display:



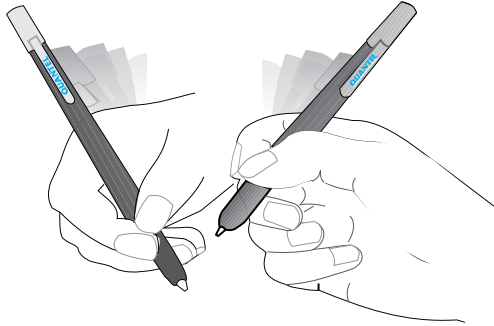
The column at the extreme left of the menu display is the list of major menu functions. The boxes to the right of this column indicate functions (or sub-menus) within each of these menus, when selected.

The menu boxes at the extreme right of the display relate to the *mask*, *black*, *grid*, *glue*, *snap*, *cut*, 'zoom' and 'temporary buffer' functions, which can be used in a variety of combinations depending on the operation currently being performed and which main menu is currently selected.



## The Pen

The pen (also referred to as a 'stylus') is used to access all of the system's functions via the on-screen menu displays. This tool is held in the same manner as a conventional writing pen:



When the pen is held in proximity to the Tablet (ie within 5 mm, close but not necessarily touching) a cursor in the form of a cross (usually yellow) appears on the screen. This cursor moves about the screen as the pen moves around the Tablet, each position on the Tablet corresponding to a position for the cursor on the screen.

Unlike a computer mouse where the position of the mouse and cursor can be made independent by lifting and moving the mouse, when the pen is lifted out of proximity and put back down in the same place on the Tablet, the cursor will be in the same position on the screen as it was before. This feature can be very useful when tracing an image placed on the Tablet. The pen's nib is pressure sensitive allowing the user to indicate points on the screen by moving the cursor to the specified position and gently pressing the pen onto the Tablet.

The pen can be used for menu selection, colour mixing, painting and to control the system's operating parameters. Numeric values for example, can be entered on some menus using pen movement in the picture area while the menu is displayed. Values in selected green boxes can be adjusted by dragging the pen up/down or left/right in the active picture area. Up and right movements increase the value in the selected green box, while down and left movements decrease the value. The pen pressure itself will control the scale of increase or decrease, the heavier the pen pressure the larger the effect.

**Note:** Press the pen down hard to abort processes that take too long.

# Graphic Paintbox 2



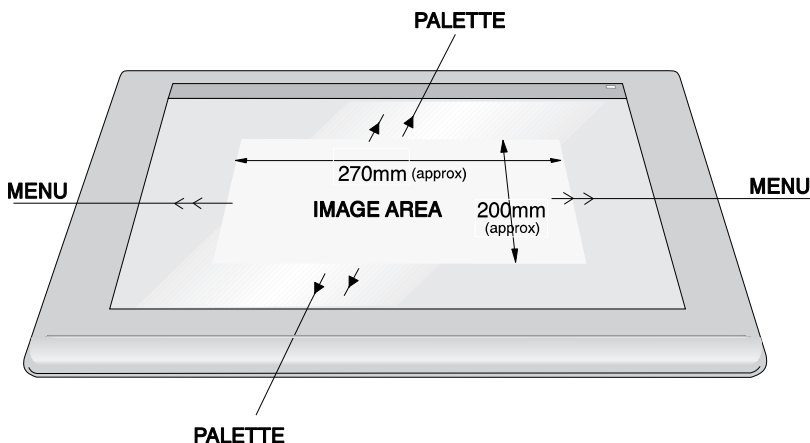
See also: *Green Menu Boxes.*

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## The Tablet

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When first learning to operate the system, begin by placing the pen in the centre of the Tablet and move it slowly around the picture area to become accustomed to the size and extent of this working area.



The system's menu and palette are obtained by swiping the pen horizontally or vertically off the Tablet. Swipe down to show/hide the palette/menu at the bottom of the screen, swipe up to show/hide the palette/menu at the top, or swipe left/right to show/hide the menu/palette. A backhand flick is the easiest way of accomplishing these moves, and therefore both right and left handed people are catered for.

**Note:** When re-calling the palette or menu display, it is only necessary to move the pen approximately 50 mm out of the image area.

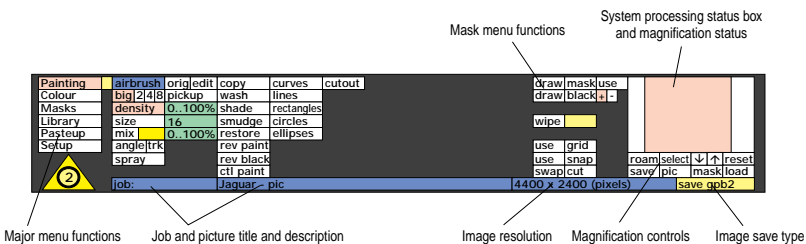
It is important to remember not to press the pen down while moving towards the side of the Tablet to swipe a display on or off, as one may unintentionally paint to or pick up colour directly from the current image. The pen simply has to be near enough to the surface to register proximity (about 5 mm from the surface) when recalling or removing a display.

The current main menu is indicated by the appropriate box in the extreme left hand column being illuminated in pink. To change menus, tap on the required box (ie move the pen so that the position of the cursor on screen is moved over the required menu item, and then press down).

## The Menus

### A DESCRIPTION

'Menu' is the term given to a displayed list of functions. There are a number of different menus in the system, covering clearly defined areas of operation. Access to them is gained by a horizontal swipe of the pen off either side of the Tablet (as opposed to a vertical swipe up or down off the Tablet, which will recall the palette).



A menu function is selected by positioning the cursor over the box describing it and by then tapping down. As selections are made on the menu, further boxes may appear representing discrete functions or sub-menus. A number of layers of menu functions exist for a variety of functions within the system.

**Note:** To recall the *Full Page* menu item, the currently selected main menu item is selected a second time (ie the main menu item currently highlighted in pink is selected a second time).

The functions of the various menu boxes are described in detail in the Menu Reference Manual while applications are described in this Fundamentals manual. When a menu box is referred to in the text of either manual, it is italicised to distinguish it from descriptive text.

# Graphic Paintbox 2

## B MENU BOX COLOURS

The menu boxes are displayed in various colours to indicate the type of function and its current status:

**Grey**

These menu items are not selected, but indicate that the function is available.

**Pink**

These are currently selected functions. Pressing pink boxes, in most circumstances, disables the function.

**Blue**

These boxes are information boxes.

**Green**

Indicate that the box value or title can be entered by the user.

Values can be changed using the *inc* and *dec* boxes, the numeric keypad, keyboard or the pen. Values can only be entered when the box has turned pink.

**Orange**

Indicate that an operation has been aborted for the indicated reason. A heavy pen pressure will remove these boxes.

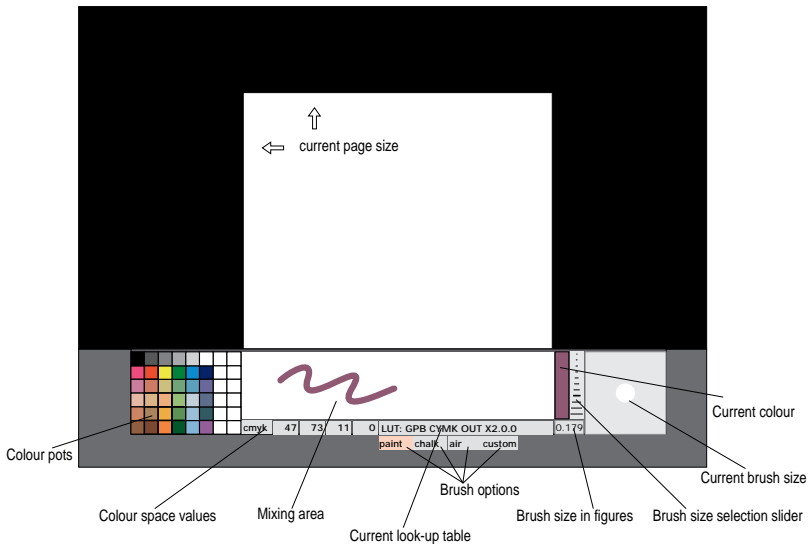
**Yellow**

Yellow boxes are used in the *grid* menu as information boxes, indicating how to process a given function ("insert if pressed" for example).

## The Palette

The palette (which can be accessed at any time by pressing button 3 on the grip) is displayed over the menu area, either at the top or bottom of the screen and can be recalled or removed as required, by swiping off the top or bottom of the Tablet.

The palette is used to select and mix colours for painting direct to a image, or to select colours to use with the colour pots that appear throughout the system's menus.



The palette provides 42 colour pots, a colour mixing area, a brush size (ie pen nib size) and various colour statistic functions.

# Graphic Paintbox 2

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## Software Options

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Depending on the type of Graphic Paintbox 2 that has been purchased, the menu functions available with your system will vary.

This document (and the Menu Reference manual), assumes that the machine is a full option machine.

Where functions are only available as an option they are usually accompanied by a note to this effect in the text.

A simple guide to which functions are available with which option, is given below:

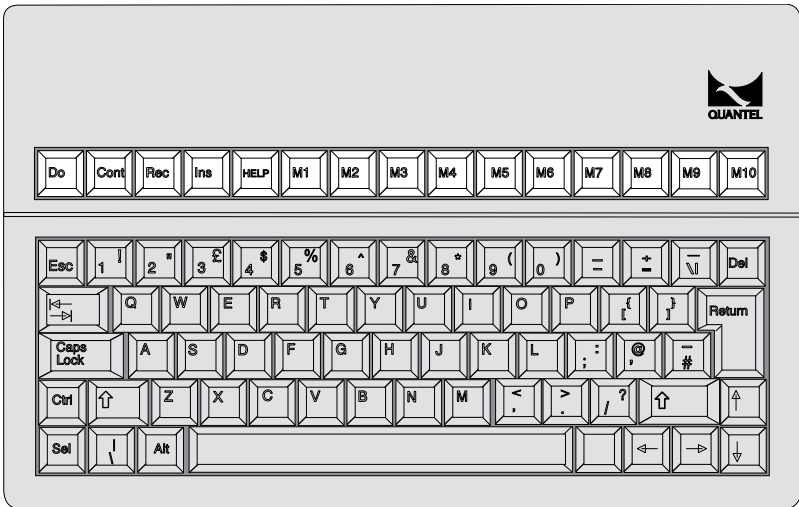
<b><u>Option:</u></b>	<b><u>Enabled functions:</u></b>
Basic Option	Does not give access to the Black menu or the multiple cutout facility.
CMYK Option	Password enabled software which gives the additional "Black" menu functions, including cmyk input and output.
Large Backstore	Enables multiple cutouts to be manipulated in 3D over the current image.

## KEYBOARD

### Overview

The keyboard supplied with the system is primarily used for text entry, for example when entering the name of an image to be saved to the system *Library*.

Other keyboard uses are described below:



### A GREEN BOX NUMERIC ENTRY

Numeric values can be entered directly from the keyboard. After entering a green numeric box (ie tapping on that box with the pen to turn it to pink - open), type the required value using the keyboard number keys (typed values will appear in the blue display line of the menus numeric keypad), then press <RETURN> to transfer the value and close the selected parameter box.

- i <B> selects the Biggest value.
- ii <S> selects the Smallest value.
- iii <D> selects the Default value (This can be used for example, to restore a specific parameter to a known working value).

# Graphic Paintbox 2

## B KEYBOARD ROAM CONTROL

Holding down the <Z> key on the keyboard whilst pressing and dragging with the pen on the screen, allows the image to be moved around the screen at the current 'zoom' value.

## C SOFT RESET

The system can be reset from the keyboard by pressing down the <Sel>, <Alt> and <Del> keys together. The 'reboot' process will take approximately 45 seconds.

## D SEQUENCE CONTROL

The sequence function is found within the *Setup* main menu item. This function allows a series of events (ie menu selections) to be recorded, edited and replayed.

When operating the sequence control, the numeric keys on the external keyboard can be used as 'short-cut' keys to perform the following operations:

<0> -	Record
<1> -	Replay
<2> -	Stop
<3> -	Rewind
<4> -	Shuttle
<5> -	Set Tag
<6> -	Delete
<7> -	Cue Point
<8> -	Insert

## E <ESC> ESCAPE

The <Esc> key can be selected to abort many functions that have either been started accidentally, or are taking too long to process.



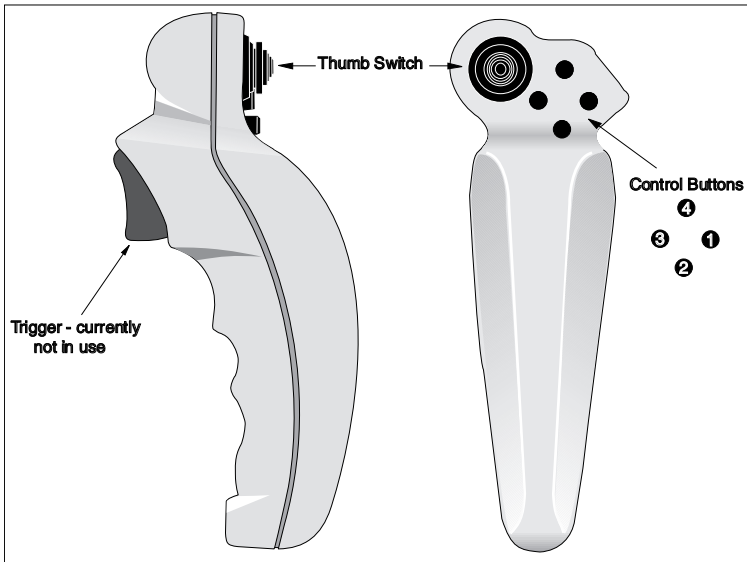
*See also: Green Menu Boxes, On-Screen Keypad.*



## THE GRIP

### Overview

The system's hand unit, known as the 'Grip', provides additional control over some of the more interactive functions of the system. The Grip consists of 4 push buttons, a trigger (currently not in use) and a 4-way, directional thumb joystick.



### A THE GRIP - THUMB SWITCH OPERATION



Pushing the thumb switch 'up' will 'zoom' in on the 'current image' in a series of steps, increasing to the level of individual pixels.



Pulling 'down' on the thumb switch will 'zoom-out' from the 'current image' in a series of steps, until the whole of the image is displayed.

# Graphic Paintbox 2

- ← Pushing to the left will toggle the add (+) function in *ctl paint*, *draw - mask*, *draw - black*, *rev paint*, *rev black* and *restore* modes.
- Pushing to the right will toggle the remove (-) function in *ctl paint*, *draw - mask*, *draw - black*, *rev paint*, *rev black* and *restore* modes.

## B THE GRIP - PUSH BUTTON CONTROLS

①

This button, while pressed, will allow the image to be scrolled by dragging the pen (under pressure) in the image area.

The cursor will change from the normal cross wires to a box shape. This indicates that the scroll function is enabled and that no other function will be accidentally activated by dragging the pen in the image area.

②

This button will allow the user to select an area of image to 'zoom' into using the screen cross wires. These yellow wires appear when the pen is moved into contact with the image area of the screen.



See also: *Zoom*.

③

- i Will recall the palette regardless of the top-level menu selected.

**Note:** The palette is also recalled by swiping down, off the Tablet.

If the menu is displayed, holding down button 3 will enable the pen to pick up colour from the image, except where picking up colour would not be appropriate (*see ii & iii below*).

- ii In the *Masks - automask* menu, button three acts as toggle between the *undo* and *reset* functions.

Selecting button three once during the creation of an *automask* will 'undo' (ie remove) the last section of *mask* added.

Selecting button 3 again will reset the *mask*; ie no mask is displayed. Selecting button three again will return to the last *undo* state; ie the *mask* at that stage will be re-applied.

- iii In the *Library* and *Pasteup* menus, with the *cutout* box highlighted, button 3 is used to select individual cutouts from amongst a group of cutouts.

With *cutout* - *many* selected, the green box to the right of *cutout* in the menu display indicates the number of the current cutout; ie the only cutout that can be manipulated at that time.

To select a different cutout for use as the current cutout, button 3 is held down and the pen moved into the image area. Tapping on a cutout will select it as the current cutout.

To change the cutout again, keep button 3 pressed down and select another cutout.

**Note:** It is not possible to move a cutout on screen with button 3 held down, only to select it. This is to avoid the problem of processing a cutout by accident.

- iv When using *restore* in the *Painting* menu, button 3 recalls just the original image so that the effect of the *restore* at that stage can be judged.



See also: *Cutouts, Masks, Library, Pasteup 3D.*

④

This button has a variety of 'show' (display) functions, which vary according to the menu mode currently selected.

When using the *restore* function (in the *Painting* menu), this button will display the original cutout.

With *draw* - *black* selected, button four will show the current black plane over a white background.

At all other times, button four will operate as a toggle to switch the *zigzag* function on and off in all menus, aside from the *Setup & Full Page* menus where it will have no effect as this control is not appropriate to these menus.

**Note:** If you want to have *zigzag* 'on' while drawing a mask, ensure that *zigzag* is switched on before selecting the *draw* - *mask* boxes.

# ***Graphic Paintbox 2***



*See also: Black, Masks, Painting.*

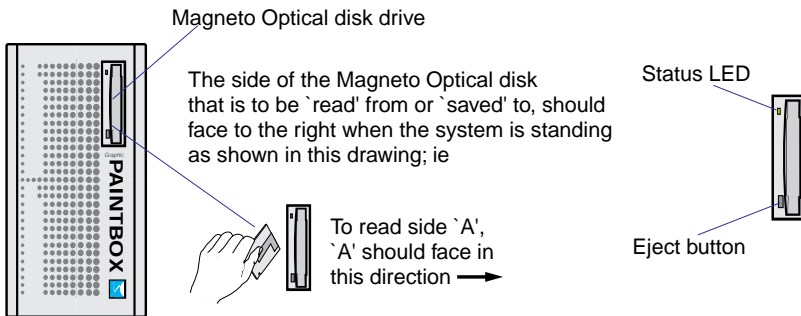
## MAGNETO OPTICAL DRIVE

### Overview

The Magneto Optical disk drive is used in conjunction with the system's computer to load new system software and to provide an image archive storage and retrieval system that provides compatibility with other Quantel equipment, enabling graphic items to be transferred easily between systems.

#### A LOADING A DISK

Magneto Optical disks are loaded into the drive that is located on the front of the Mainframe:



Slowly insert a Magneto Optical disk into the drive until the drive pulls the disk in.



**Caution 11: Do not force the cartridge into the drive as this will cause permanent damage (05/95).**

After the disk has been accepted by the drive, the drive's motor automatically runs the disk up to speed so that the drive will be 'on line'. After approximately ten seconds, the disk is accessible to the system's *Library*.

**Note:** To recall information from, or to save information to a Magneto Optical disk, the appropriate *read* or *write* function should be selected in the *Full Page* menu.

# Graphic Paintbox 2

## B STATUS LED's

The LED on the front of the Magneto Optical drive indicates the 'active' status of the drive; ie It will light when it is in the process of accessing the disk and during disk loading or unloading.

## C UNLOADING A DISK

To unload a Magneto Optical disk from the disk drive, select the 'Eject' button (*see the previous diagram*).

Once the eject button is selected, the drive's motor should run down and then the disk is ejected 75 mm (3 inches) from the drive. At this stage it can be removed safely from the drive.

---

## Precautions

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### A SYSTEM POWER-UP & RESET

If a system software disk is placed in the Magneto Optical disk drive at system power-up or system reset, the system will 'boot' from it. This function allows the system to be run from the Magneto Optical drive, should a problem occur with the 'boot software' on the system disk.

Care should be taken not to leave the system software disk in the drive when it is not required as this will slow the system start-up.

**Note:** If an incorrect system software disk (ie older version of software or archive disk), or a disk from another Quantel system is loaded in the Magneto Optical drive, the system may 'boot' incorrectly.



**Caution 13:** Always wait 20 seconds after the Mainframe is switched off before turning the system back on again. This will allow the internal and external disk drives time to run down correctly (06/95).

### B WRITE PROTECT

The drive can be 'read' and 'write' protected during system operation, using the 'disk block' functions of the *Full Page* menu.

The disks themselves can be 'write protected', using the tabs on the disks, providing greater security.



*See Full Page Menu.*

**CHAPTER 2**  
**TOPICS A - E**

**A - E**

# ***Graphic Paintbox 2***



## BLACK

### Description

**Note:** The 'Black' menu functions are only available on those systems loaded with the 'cmyk' option. This option is purchased from Quantel and installed with a system specific password supplied with the software.

Situated on the far right of the main menu, below the *draw - mask* menu boxes, are the menu boxes for the *draw - black* function. The black function allows access to the 'black plane' element of an image; ie the 'K' element of a 'cmyk' image. Black can be used to create automatic, 'black only' drop shadows (*see 'Example 1', in this chapter*) and vignetting, as well as specific colour value correction.

*Draw - black* works in conjunction with the plus (+) and minus (-) menu functions, to allow black to be manually added to or removed from all or part of an image, with the pen; ie black can be 'painted in' or 'painted out' (with the menu first swiped off screen).

The plus (+) and minus (-) functions can be toggled by pressing to the left or right respectively, on the Grip thumb switch.

*Black* can be saved within the *Library* as its own individual element or in combinations with other elements, such as a picture file for example.

# Graphic Paintbox 2

## A CMY(K) & CMYK IMAGES

When loading 'cmyk' images as a new background image (*new bgnd*) from the *Library* menu (ie loading an image as the new or 'current item'), a choice of 'colour space' formats is available. The choice offered is between 'cmy' and 'cmyk'.

### i cmy(k)

When the *cmy(k)* format is selected, the black plane information (k) from the original image, is separated so that it can be worked on directly; ie the image is built only from the CMY components.

In this instance, any black plane work will always be based on the original 'k' information; ie the user will be adding to or subtracting directly from the 'k' data as it was loaded from the image.

**Note:** If the *k to black* function is not selected along with the 'cmy' box, the image will be loaded with only the 'cmy' data retained; ie the black (k) information is lost.

### ii cmyk

If the 'cmyk' format is selected, the image is loaded straight from the *Library* with the Cyan, Magenta, Yellow & Black information, converted to the GPB 2 internal colour space.

When additional black information is generated using *draw-black*, this separate 'k' value will be added together with the original 'k' information derived from the image; ie When any new black is added to an image, the total value of black at any given point will be the derived 'k' value of the image (from the 'cmyk' values), plus the value of black added with the *draw - black +* function.

**Note:** The 'cmyk' readout in the palette will only show the black contained in the 'normal' image if the *black* function is not turned on, but will show the combined black value, from the image and the 'black plane', when this function is activated.

## B BLACK PLANE MASKS

The 'black plane' information in a given image can be used to generate a *mask* or to add to an existing *mask*. An example of where this may be required for example, is when creating a run around of an image which has a 'black only' drop shadow.

To create a *mask* from the 'black plane' information from the 'current image', the *Masks - black* menu is selected.

It should be noted before entering this menu, that the *draw - black* function must have been selected since the last time the system was reset, before entering the *Masks - black* menu. This is necessary to allow the system to create space for a new 'black plane' to exist. If this is not performed, the system will lock and state:

**No black**

To remove this box and unlock the screen, press down hard with the pen.

When the 'black plane' information is used to generate a *mask* (ie the *make mask* function is selected in this menu), the subsequent *mask* will be added into any existing *mask* information; ie it will form a composite *mask* in which the 'black plane' can be added or removed from other *mask* information, with the selection or de-selection of *draw - black*.



*See also: Reversible Black.*

# Graphic Paintbox 2

## C REVERSIBLE BLACK

The reversible black (*rev black*) function is accessed from the *Painting* menu. This function allows the 'black plane' of the 'current image' to be manually added or that component removed, with the current pen size and pen type (ie *paint*, *airbrush*, *chalk* brush or *custom*). Reversible black is particularly useful when working with soft edged stencils and/or low pressure air brushes, as it uses an additional set of combiners which employ dynamic rounding to reduce any potential banding effects.

The reversible black function offers a flexible method of working with the 'black plane', because black is not permanently added (or removed) from an image, until the *finish* function is selected to permanently apply any alterations (ie *finish* operates in the same manner as *stick*). De-selecting *rev black* for example, before selecting *finish*, will lose any black amendments up to that point.

The pen is switched between one of two modes of operation in this menu; adding or removing. The current mode is indicated by the '+' or '-' function being highlighted in the menu. These two modes can also be toggled between by pushing left (for '+') or right (for '-') on the Grip thumb switch.

To manually add or remove black, the menu is first swiped off screen and then the pen applied directly to the 'current image'.

**Note:** Any 'black plane' that existed prior to selecting the *rev black* function is regarded as a permanent and can not be altered with the remove (ie '-') function.

The 'v' menu box (to the right of '+' and '-'), will display a black and white contrast picture of the original 'black plane' (where applicable) that existed with the 'current image' before any work with the *rev black* menu was performed. Any black that has been additionally added will not appear in this 'view' until *finish* is selected to permanently combine the old and new black elements. The 'view' image will remain on screen for as long as the 'v' menu button is pressed down.

Reversible black can be constrained with the *mask* controls, to add or remove only from a defined area of the 'current image'.

Painting the black plane also works in conjunction with the *roam* and *select* tools, so that alterations can be made at any magnification and at any point on the current image. Very fine detail work on the black plane is therefore possible.



*See also: Swap.*

## Example 1

A method of creating a 'black only' drop shadow, is as follows:

- i An image is selected from the *Library* and called in as the 'current image' using the *new bgnd* function.
- ii The *Painting - curves* menu is selected.
- iii By combining the *filled* and *auto* functions, a *curve* can be quickly generated to cover that part of the image that requires shadow detail.  
A small brush size is recommended to trace the detail of an image.
- iv *Draw - mask* is selected to convert the *curve* to a *mask*, before tagging the *mask* to the image with the *stick (stick - confirm)* function.
- v After de-selecting *curve*, reverse the *mask* (by selecting *rev*) and apply that *mask* with *use*.
- vi *Draw - black* is selected to access the 'black plane'.
- vii The *cut* or *cut - all* functions are used to define the area to be used as shadow. The *cut* functions will generate a copy of that area.
- viii *Draw - mask* is re-selected (while *draw - black* is de-selected), and the area of the 'current image' to have shadow added is covered by *mask* to protect it, by again selecting *rev* (ie reverse).
- ix *Use - mask* and *draw - black* are selected.
- x The *cutout - find* menu recalls the cutout  
**Note:** Only when the cutout is stuck down will it appear as a 'black plane'.
- xi The cutout can be manipulated as required; ie changing the cutout density or switching on *shape* to use the 'shape' only as the shadow.
- xii The cutout can be positioned on screen and *stick* will add the 'black only' shadow to the 'current image'.  
**Note:** A 'black only' shadow will only appear with *draw - black* selected.

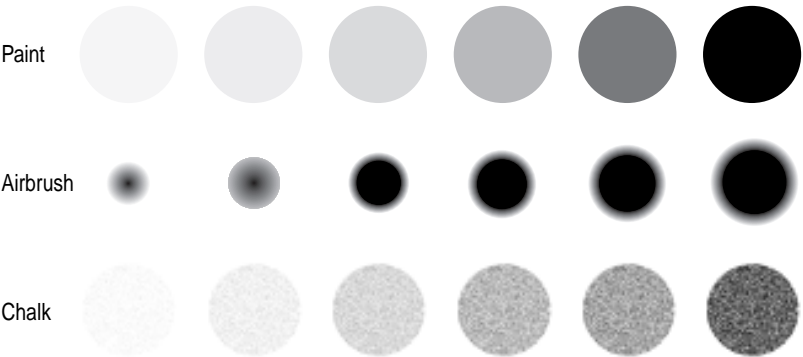
# ***Graphic Paintbox 2***

BRUSHES

Overview

When the pen is employed to work directly on the ‘current image’, application of the currently selected function will be dictated by the current brush type and size. If using the pen to paint directly to the ‘current image’ in the *Painting* menu for example, the current brush type will dictate the style in which paint is applied.

A choice of three principle brush types are available from the *Painting* menu. These are *paint*, *airbrush*, *chalk* brush, and all can be accessed via the list menu/roller bar. To activate the roller bar, tap on the brushes titles bar. This will activate a grey roller menu of current brushes available, which can be scrolled through by pressing the pen on the current title highlighted and dragging the pen towards the top or bottom of the screen. While scrolling, brush titles will turn white as they pass through the blue active title box. Once a title has been dragged into the active title box and the pen is lifted out of proximity the roller menu will disappear and the active brush name will be seen in the blue title bar.



The three brush types showing the effect of applying progressive pressure

# Graphic Paintbox 2

All three brushes are pressure sensitive to allow a variety of effects to be generated. The translucency of the *airbrush* can be further refined with a 'paint' to 'water' percentage box which is recalled with this function. This can be varied between 1 and 100%. In *normal* operation, the size of the current brush type is selected from within the palette area. Additionally, the system offers a choice of *big* brushes.

*Big* brushes enable the current brush size (as defined in the palette menu) to be doubled, quadrupled or increased to eight times its current size.

This function is useful for working with extremely large images when performing a *restore* operation for example, where a large amount of detail from the cutout image is to be restored (*see: Big Brushes*).

## A PAINTBRUSH

This is the default brush type and is automatically selected on power - up. The *paint* brush is round in shape and deposits colour evenly over the range 0% to 100%, depending on the degree of pen pressure applied. This brush can be used in a similar manner to a wide range of conventional media, ranging from oils through to pencil.

Light pressure on the pen gives a transparent deposit of colour while full pressure will cause colour to be laid down as a dense, opaque film. Re-painting an area of image (ie going over the same area more than once) will also have a corresponding effect on the density of colour at that point.

## B AIRBRUSH

This brush provides an exact parallel with a conventional airbrush, offering an even 'spray' at the selected width, whenever the pen is in contact with the Tablet.

**Note:** If the pen/*airbrush* is left continuously in one place, in contact with the Tablet, a hard edged circular pattern will result.

Aside from producing the same results as a conventional airbrush, the distinct advantage of the Quantel *airbrush* is in the removal of many of the time consuming tasks associated with using this tool conventionally. The electronic *airbrush* for example, removes the need for paint mixing, brush cleaning and rinsing, and nozzle or needle maintenance. Mistakes can also be erased (when using the *rev paint* function) and it is possible to select intermediate shades directly off of the image for vignetting.



When the *airbrush* is selected, a green percentage box will appear to define the translucency of any colour to be applied with this brush type. This defines the *airbrush* 'paint to water' ratio; ie how strong the mix or 'flow' will be. Because the pen is pressure sensitive, the density of airbrushing is continuously variable.

A specific advantage of using the *airbrush* when producing rectangles in the *Painting* menu, is the ability to create rectangles of different densities. This is achieved by varying the *airbrush* density.

For example, creating a solid rectangle with the *airbrush* at 100% will produce a hard edged block of colour. However, by reducing the *airbrush* to 50%, the *solid* fill will have half the level of opacity, allowing image detail to be seen through the fill. Where *solid rectangles* of different densities are overlaid, the different densities will mix.

Similarly, when using the *wipe* menu function, if *airbrush* is the currently selected brush type, varying the density of the *airbrush* will vary the opacity of the *wipe* that is performed; ie image detail will be revealed through the reduced opacity of the *wipe*.

**Note:** It is advisable to experiment with altering the *airbrush* 'paint to water' value, to gain experience of its operation and to understand the diversity of results that can be achieved.

## C CHALKBRUSH

This provides a similar type of brush to the *paintbrush*, but produces a texture like chalk, or a soft pencil or crayon on textured paper. A fine *chalk* can be used to simulate pencil sketching techniques.

# Graphic Paintbox 2

## Custom Brushes

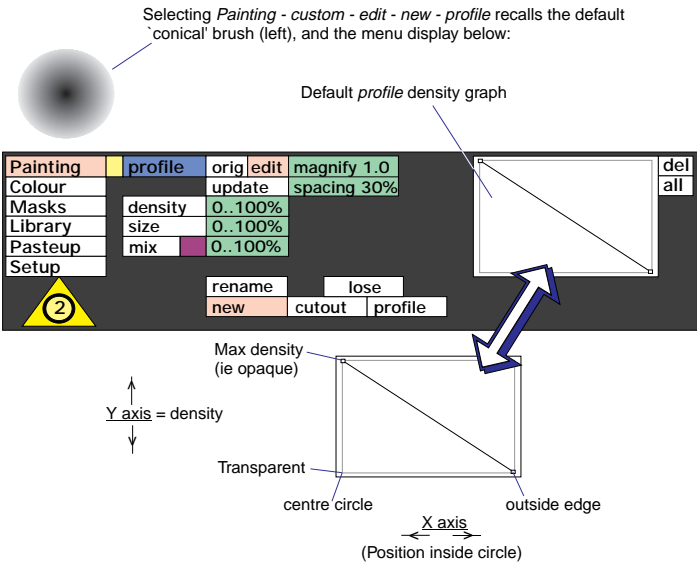
Within the *Painting* menu, and in conjunction with the *draw mask* layer, unique brush styles of any shape or pattern can be created. All custom brushes can be used with the big brush function (in *rev paint*, *rev black*, *ctrl paint* and *pickup*). Custom brushes can also be used when creating masks and restoring one image through another.

### A HOW TO CREATE A CUSTOM BRUSH

There are two ways of creating a custom brush:

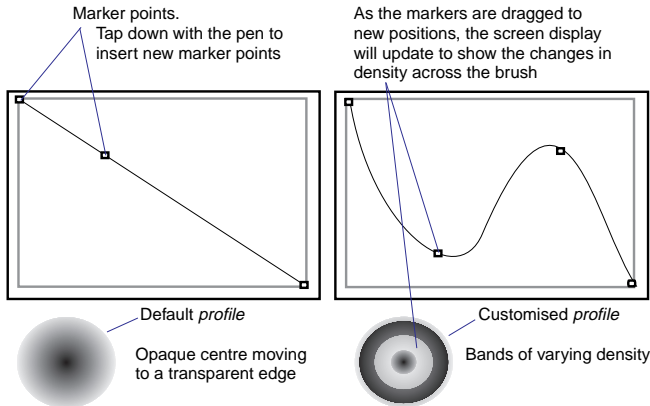
#### i Profile brush

The *profile* function is accessed within the *Painting* menu, under *edit* - *new* - *profile*. Selecting *profile* will recall a conical brush shape and a linear graph. The default graph is not the airbrush. The conical brush is opaque in the centre, increasing in transparency towards the outside edge.



When *profile* has been activated, a new brush called 'profile' will automatically be created in the roller menu (this can be renamed if desired).

To manipulate the graph, additional points can be added by tapping down anywhere along the graph line. These points can then be dragged along the x axis to define the amount of feathering in the brush, or the y axis to define the density (*see diagram below*).

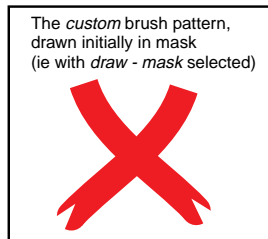


To remove individual points on the graph line, activate the *del* (delete) box and then tap down on the point to be removed. To remove all points on the line, select *del - all*. Such an action effectively resets the graph to its original default setting.

## ii Custom brush

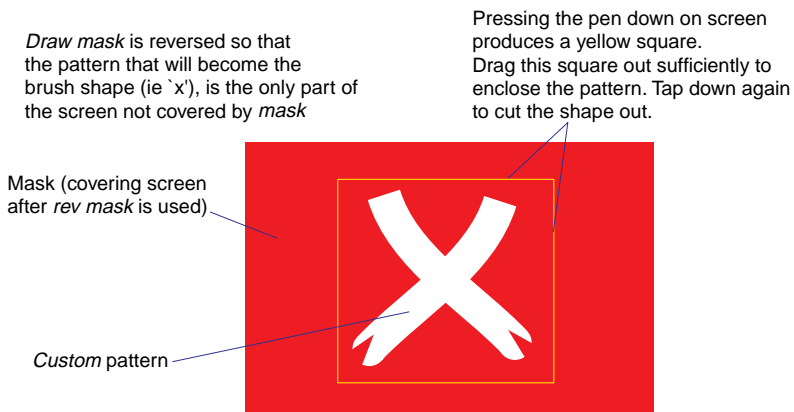
To define a shape for a custom brush, the shape first has to be designed in the *draw mask* layer. Ideally, the optimum size for the brush shape should be around 200 x 200 pixels (the *grid* function can be utilised to define the area). If the brush shape is much bigger than 200 x 200, the system may take a long time to generate very small versions of the brush.

Before creating a brush, ensure that there is no mask in the current *draw mask* plane. Create the new brush using the *draw mask* layer on + ( or alternatively, use *draw mask - on* a screen flooded with mask).



Once the basic shape of the desired custom brush has been created in the *draw mask +*, the mask should be reversed so that the brush shape is seen as a hole in a solid mask.

# Graphic Paintbox 2



To save the custom brush, select *edit - new - cutout*, and then tap down on the centre of the brush shape and (keeping the pen in proximity) move slowly out to the edge of the brush shape to surround the brush area with a yellow box. Tapping down a second time will confirm the boxed area as the custom brush, and the system will then automatically show a repeated preview of the new brush shape.

The brush is now immediately available to paint with.

As a default, any new brush created will automatically be saved as 'New Brush' in the roller menu. In order to avoid confusion - if there are already a number of 'New Brush' titles in the roller bar - it may be advisable to retitle the new brush (using the *rename* function). The *rename* function automatically saves the brush name to the *Library*.

## B CUSTOM BRUSHES AND THE LIBRARY

Custom brush shapes can be saved via the *Library*, by choosing the *brush* format within the *Library - save - name - image* options.

Painting	find	name	group	any	gpb lut
Colour	save	job	pic	palette	curve
Masks		category	mask	grid	brush
Library	keep		black	sequence	keymap
Pasteup	lose	col space	curve	col correct	
Setup	recall		brush		

Once in the *Library*, brushes can be searched for in the same way as any other type of file. Selecting *Library - save/find - name - images - brush* allows the user to save or fetch a brush file from the *Library*.

**Note:** When fetching a **brush** file, more than one can be selected at a time. Once the file name has been tapped on, the brush will appear in the roller menu.

## C ROLLER MENU FUNCTIONS

The roller menu allows *custom* brushes to be selected for use from a list of brushes which are either loaded from the *Library* or saved from the *custom* menu.

### i **Rename**

Selecting this box enables the user to retile the brush in the roller menu. When retitled the brush file is automatically saved onto the hard disk. The file name in the *Library* will be overwritten should the file be renamed again.

**Note:** If a new brush has been cut out, and has been left with the 'New Brush' default name, it must be retitled in order to be saved to the *Library*. *Custom* cutout (ie not *profile*) brushes which are not saved to the *Library* will have an asterisk next to their titles in the roller menu.

### ii **Lose**

This function, in conjunction with *edit*, is used to delete a brush from the roller bar. If however, the brush has previously been saved, the *lose* action will only have deleted the brush from the menu bar, not the hard disk. If the brush is deleted from the *Library* while it is still in use on the roller menu, it will not disappear from either but will have been marked for deletion (this will only be remembered while the software is running). If the brush is lost from the roller menu while marked for deletion, it will be deleted from the *Library* as well.

Any deleted brush will automatically push the next custom brush in the menu up into the now vacant position.

### iii **Update**

At any time brushes that have been created or saved can be modified, and these modifications should then be saved using the *update* box. If the update box has not been used to save the changes, the brushes will return to their original settings upon restarting the system.

# Graphic Paintbox 2

## D MODIFYING CUSTOM BRUSHES

There are a number of ways that custom brushes can be manipulated to offer maximum creative freedom to the user. In order to activate the new brush for modifying, select *edit*.

Painting	custom	orig	edit	magnify 1.00
Colour		update		spacing 30.0
Masks	density	100%		
Library	size	1...20		
Pasteup	mix	100		
Setup	angle	0		
	rename			
	new			

### i *Magnify*

This function alters the size of the brush between a minimum default of 1.00 and a maximum of 3.00. The magnification remains in proportion so that as the brush shapes enlarge they do not start to overlap.



**CAUTION:** Attempts to paint quickly with large brushes on large images can result in unwanted artefacts being stamped onto the main image. Zoom to where the zoom box shows grey to optimise the use of the large brushes.

### ii *Spacing*

The preview line (shown by the system after a new brush shape has been created) is a line of brush stamps, and when each stamp is very close to the next the preview will show a solid line. Using the *spacing* function (measured in % terms) allows the gaps between each brush stamp to be increased/decreased, within the 0.5% minimum and 500% maximum range.

Custom shape



A line drawn with the *custom* brush with a small percentage *spacing* value



custom	orig	edit	magnify 1.00
	update		spacing 0.7%
density	100%		
size	20		
mix	0..100%		
angle	0..0		
	rename	lose	
	new	cutout	profile

Selecting the *spacing* box and then dragging the pen in the screen area will alter the spacing in real time. Movement up screen increases values, down screen reduces values. In this example *spacing* is increased, so each stamp moves further apart



Brush Controls

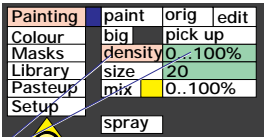
Upon selection of any type of brush, there are a number of further options available to the user to define the controls of the brush.

Painting	custom	orig	edit
Colour	big	248	pickup
Masks	density	0..100%	
Library	size	124	
Pasteup	mix	100%	
Setup	angle	trk 0	
	spray	min 0%	
	area	80	

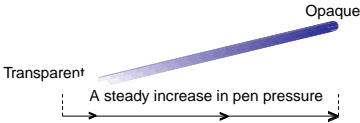
A DENSITY

Defines how much paint will be deposited at any time. This function can be used in several ways:

- *Density* unselected at 100% gives a full pressure brush with a solid stroke.
- *Density* selected offers a pressure-sensitive variable range box of between 0-100%. Remaining on the 0-100% default range will offer transparent colour at 0% pen pressure and full strength solid colour at maximum 100% pen pressure. The *density* function must be highlighted to offer pressure-sensitive strokes.
- Brush *density* can be constrained (using the two numeric value sub-menus, which appear to the right-hand side of the menu) when the pressure variable box is activated, with the *density* box highlighted. The first box defines the minimum colour strength with minimum pen pressure, while the second box defines the maximum colour strength at maximum pen pressure. *See diagram below.*



Density highlighted, enabling brush opacity to vary with pen pressure.  
Here the variation is between 0 (transparent at minimum pressure), to 100% (opaque at full pen pressure):

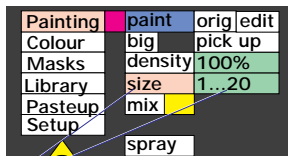


# Graphic Paintbox 2

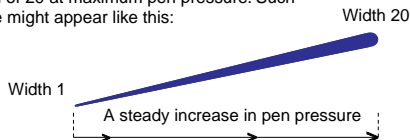
## B SIZE

Defines the size of the brush in relation to pen pressure. This can also be used in a variety of ways:

- If the size box remains unselected it can be used purely to set a single brush size, which will remain constant regardless of pen pressure applied.



Size highlighted, enabling brush width to vary with pen pressure. Here the variation will be between a width of 1 and a maximum width of 20 at maximum pen pressure. Such a line might appear like this:



## C MIX

Allows a second colour to be chosen to mix with the current pen colour (as selected by the user). The second colour can be picked up from the palette or picture area and deposited in the *mix* colour box.

The *mix* function can also be used in combination with the pressure-sensitive variable boxes, to limit the amount of colour mix when pen pressure is applied via the brush. For example, a 0-100% range will give a full range colour mix between the two colours selected, with colour varying between the pen colour at minimum pressure through to the colour in the *mix* colour box at maximum pen pressure.



D ANGLE

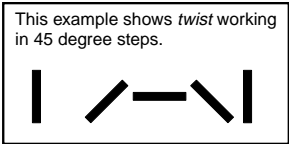
**Note:** This is only available with *custom* cutout brushes.

Allows the user to define the *angle* (ie rotation) of *custom* cutout (ie not *profile*) brush stamps. At a 0° *angle* the *custom* brush will appear in the same aspect as when cut from the mask.

When the *angle* box is highlighted (ie pink), the angle will be pressure sensitive, between two values. Selecting the numeric box allows the minimum and maximum rotation values to be defined. The first box will control the *angle* of the brush at minimum pressure and the second box will define the *angle* of the brush at maximum pen pressure.

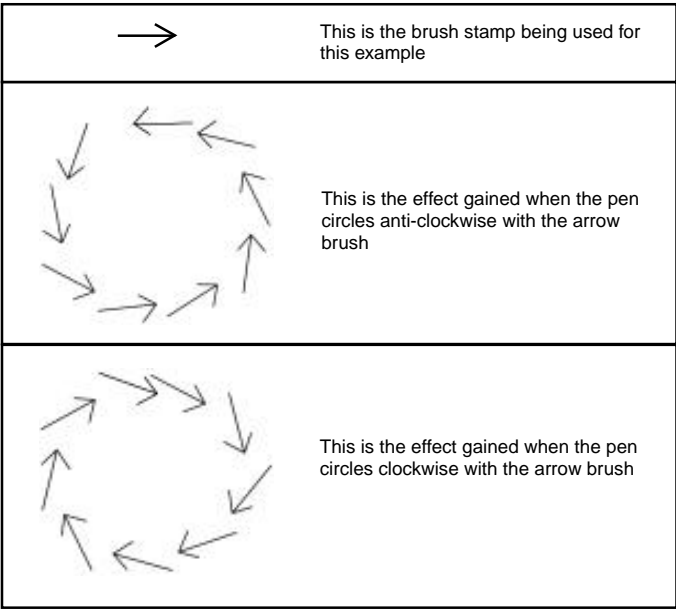
The numeric menu also contains the further options *rand*, *mod*, *f*, *l* (*described in ‘Secondary Menus’, below*) and *twist*.

*Twist* sets a number of degrees to add to each successive brush stamp. This produces an accumulative angle effect.



E TRACK

This function allows the angle of the brush stamp to follow the direction of the pen movement.



# Graphic Paintbox 2

*Twist* is also seen to be active with *track*, but the two options are not compatible as *track* effectively overrides *twist*. *Twist* is only available for use with *angle*.

## F PICKUP

When this function is selected a copy is made of the main image, which sits behind the copy. Painting in this mode allows the user to 'pick up' the pixel colours from the copied image and use them as brush stamps as the pen travels over the main image. Painting with a fine brush will result in an image similar to that of the original, whereas a larger brush will distort the image.

Pickup will continue to work if the image has been wiped or otherwise modified without deselecting *pickup*, with the pen picking up the colour pixels of the hidden image and depositing them onto the painting area.

## G SPRAY

This function allows the active custom brush to be randomly splattered over a circular area. De-selecting the *area* box (so that it is grey) allows the area of the spray circle to be fixed. Alternatively, highlighting the *area* box allows the spray area to become variable, with the first box determining the minimum area to be sprayed when applying minimum pen pressure, and the second box determining the maximum spray area when applying maximum pen pressure.

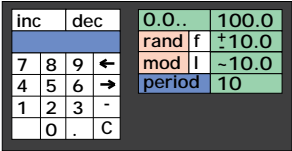
The percentage in the *min* box controls the size of the smallest brush stamps as a percentage of the maximum value in the *size* numeric box (or the size set by the pen pressure if the *size* box is highlighted).

The *size* function can also be used to determine the size of the brush stamps (fixed or variable) within the spray.

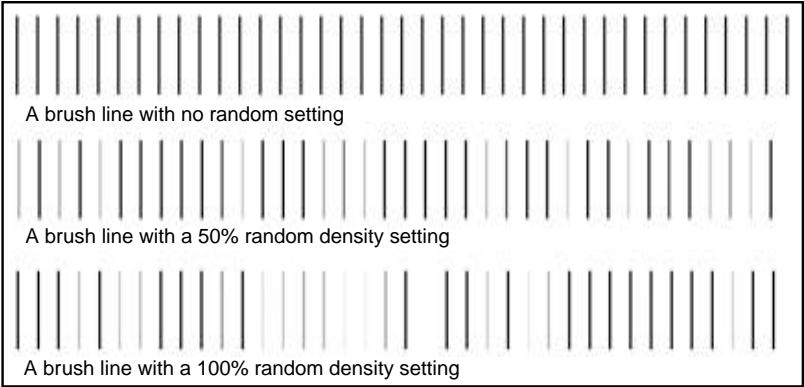
H SECONDARY MENUS

i Rand (Random)

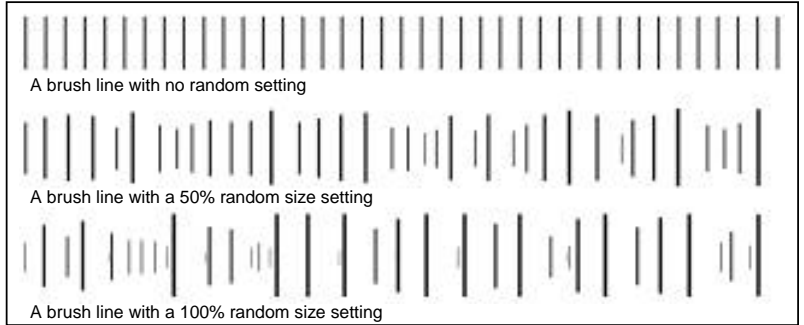
This is a secondary menu which appears when the pen pressure variable boxes are selected for *size*, *density*, *mix* and *angle*.



*Random* with *density* will make the brush stamps appear at a random density dependent on the values keyed into the *rand* boxes. A  $\pm$  value of 50% means that the density will vary either side of the set density by 50%.



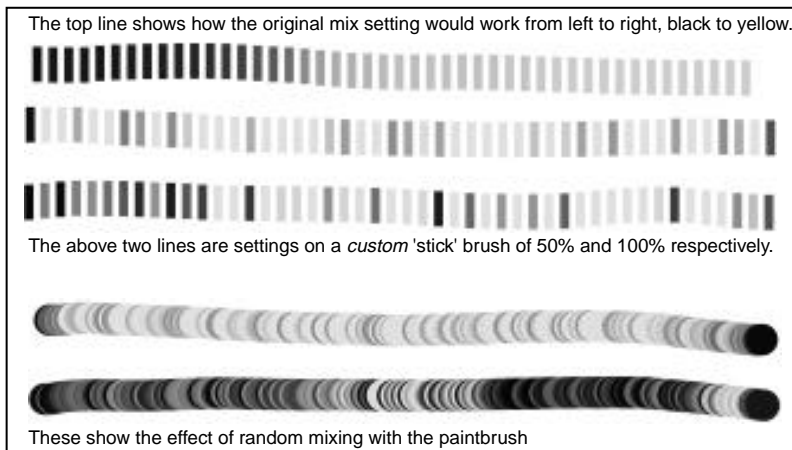
*Random* with *size* will vary the size of the brush stamps depending on the numerical values entered.



# Graphic Paintbox 2

The brush stamps on the second line are now varying in size 25% either side of the selected setting. For example, if the brush setting is 100, then the largest brush stamp will be 125 and the smallest will be 75.

*Random* with *mix* will vary the colour of the brush stamps between two chosen colours.



*Random* with *angle* (only available with a *custom* cutout brush) will vary the *angle* of the brush stamps depending on the numerical values selected.

The system takes the minimum *angle* (as set by the user) and then randomly applies the user specified  $\pm$  setting to the *angle* for every brush stamp.



## ii **Mod (Modulation)**


This is a secondary menu which appears when the pressure variable boxes are selected for *size*, *density*, *mix* and *angle*.

Modulation, which is considered a good means of creating new textures, is sinusoidal, meaning that any modification will change smoothly with pen position, repeating after a number of brush stamps set in the *period* box.

inc		dec		0.0..	100.0
				rand f	±10.0
7	8	9	←	mod l	~10.0
4	5	6	→	period	10
1	2	3	-		
	0	.	C		

*Modulation* with *density* will offer a controlled variation, repeating change in *density* (as set by the user) over a user-defined number of brush stamps.


Here 0..100% *density* has been selected, with *modulation* of 10% over a *period* of 10.



An example of 0..100% *density*, *modulation* of 100% over a *period* of 10 brush stamps.

*Modulation* with *size* will offer a controlled variation in the *size* (already defined by the user) of the brush over a number of brush stamps (to be set by the user).

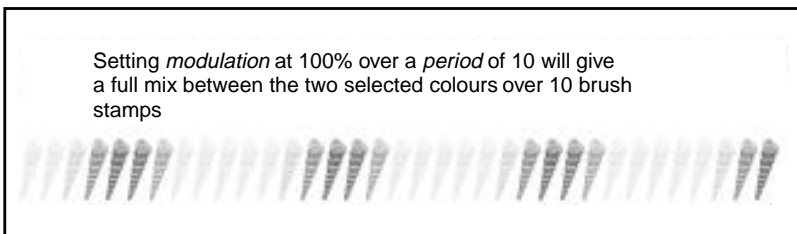
*Modulation* of 100%, over a *period* of 10



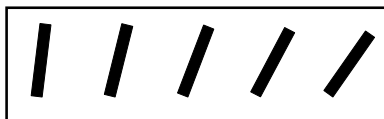
*Modulation* of 10%, over a *period* of 10.  
As the modulation decreases, the effect becomes flatter

# Graphic Paintbox 2

*Modulation* with *mix* will offer a controlled variation in the colour mix (already defined by the user) over a given number of brush stamps (set by the user).



*Modulation* with *angle* (only available with *custom* cutout brushes) will offer a controlled variation in the *angle* of the brush stamp (already defined by the user) over a given number of brush stamps (set by the user).



## iii L/F (Line and Frame)

These boxes, which appear to the right of the *rand* and *mod* functions, offer additional controls. *L* (line) will reset the variation every time the pen is pressed down in *Painting*, or each time a new line is started in *Graphics*. *F* (frame) will reset the variation due to the *rand* and *mod* boxes every time the artist swipes off to paint or creates a new graphic.

## I ORIG (ORIGINAL)

This function returns the brush being modified back to its original setting. This is helpful if the modification being worked on is unsatisfactory. *Orig* works with *density*, *size*, *mix* and *angle* and when *orig* is selected with one of these (or the corresponding numeric box) the numeric values will be altered to defaults where appropriate, and all varying characteristics will be turned off.

## Big Brushes

The *big* brushes function is used to increase the current brush size by multiplying it by a factor of 2, 4 or 8. This function is only applicable when working with the *Painting - restore*, *rev paint* or *rev black* functions.

Large brush sizes should generally be employed when working with exceptionally large images, and only where fine detail is not required.

To work with the a *big* brush, the *big* brush size must be selected before the *restore*, *rev paint* or *rev black* function is selected (ie *Painting - big* and then 2, 4 or 8).

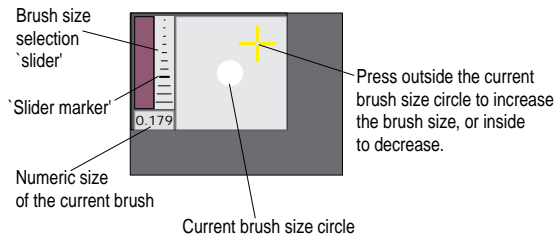
It is not possible to change the *big brush* 'scale factor' (ie x2, x4 or x8) while performing an operation. The 'scale factor' must be selected before processing with a selected menu function.

A - E

## Selecting 'Normal' Brush Sizes

The current size of a *normal* brush is determined within the palette menu (*big* brushes are either twice, four times or eight times as large as the current *normal* brush size).

The brush size 'selectors' are on the left hand side of the palette menu (see diagram on the following page):



There are three methods of altering the current brush size:

- i Using the pen to move the marker on the brush size 'slider'.  
The 'slider' (*see above*) represents a scale which ranges between the largest and smallest brush sizes. The 'slider marker' sits on the point which represents the current brush size within that scale.  
Dragging the marker up the 'slider' (↑) will reduce the current brush size and dragging down (↓) will increase the size.
- ii Using the brush stamp display.

# Graphic Paintbox 2

The white circle, or brush stamp, to the right of the 'slider' in the palette menu, represents the current brush size.

Pressing on a point outside the current brush stamp (but within the grey rectangle which marks the extent of this display box), attaches the edge of the brush stamp to the pen. By then dragging the pen the brush diameter will increase and the brush stamp will expand to the new size.

By pressing on a point inside the brush stamp, the diameter will 'snap' down to the indicated point.

### iii Using the current brush size numeric box.

Selecting the numeric box (situated below the 'slider' in the palette menu), will recall the numeric keypad to allow a new value, larger or smaller, to be entered.

With the numeric keypad recalled, moving the pen up or down in the image area will also increase or decrease the current value, respectively.

**Note:** Whichever method of altering the current brush size is selected, the other options will update at the same time; ie the 'slider marker' will alter its position to reflect any change, the numeric value will update and the white, current brush 'circle' display will alter in size proportionally to reflect any changes.



*“Painting”, “Palette”, “Pen Control”.*

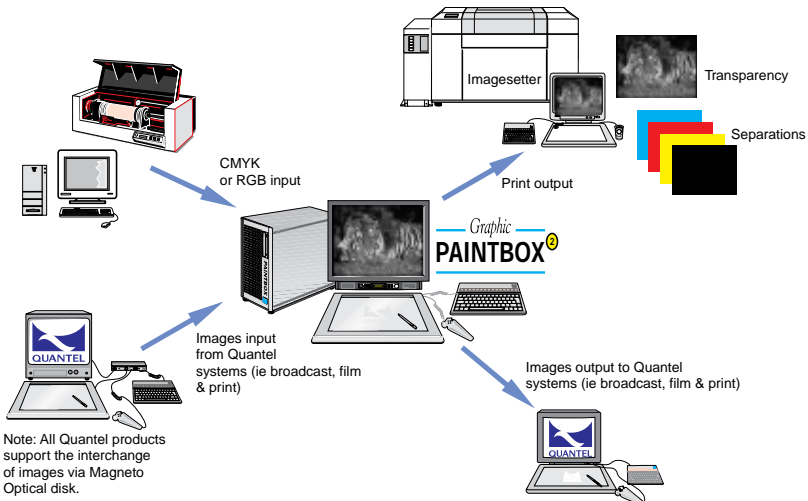


## CMYK OVERVIEW

### Introduction

The Graphic Paintbox 2 system is designed to be capable of accepting image information from a wide range of professional sources (*see also Fundamentals chp 2 - "Connectivity"*). The CMYK option provides an efficient and flexible colour conversion mechanism, adding CMYK input and output to the other formats handled by Graphic Paintbox 2.

Because the CMYK option operates in conjunction with the other colour input/output paths, it offers an enhancement of operation by allowing image data to be mixed from RGB and video applications with image data from the world of print. The diagram below summarises these ideas:



# Graphic Paintbox 2

Internally, Graphic Paintbox 2 is colour space independent and will handle the demands made by all of these input types, creating a common set of image data. The system converts all input data types into the Graphic Paintbox form, for use when retouching, montaging or when using any of the other creative features of the system.

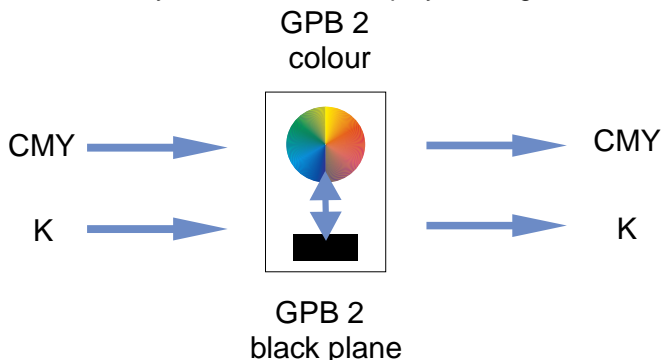
In contrast to RGB and the other input options, CMYK image data is unique in that there are many different combinations of CMY and K that will produce the same visual colour response - this is the same principle that allows UCR (Under Colour Removal) and GCR (Grey Colour Removal), to work. Graphic Paintbox 2 is equipped with a colour computer capable of interpreting these ambiguous conditions. The design and implementation mean that the system can allow two distinct operating methods for CMYK images - CMYK and CMY(K).

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## CMY(K)

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When using the CMY(K) format, the CMY component of the input image data is converted to the colour image component of Graphic Paintbox 2. The black (K) channel is saved separately in the 'black plane' as an overlay visible with the displayed image.

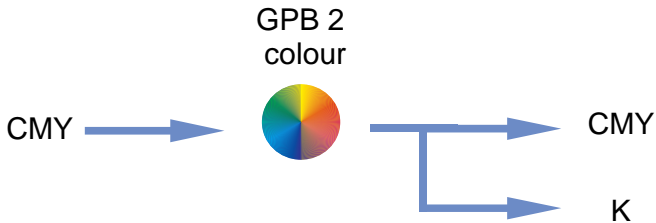


This format allows the CMY image to be manipulated independently of the black plane and the black plane can be modified by painting into it independently of the CMY colour data. The advantage of this method is that the data is reversible, therefore the output data values will retain the scanning and other print conditions applied at the input.

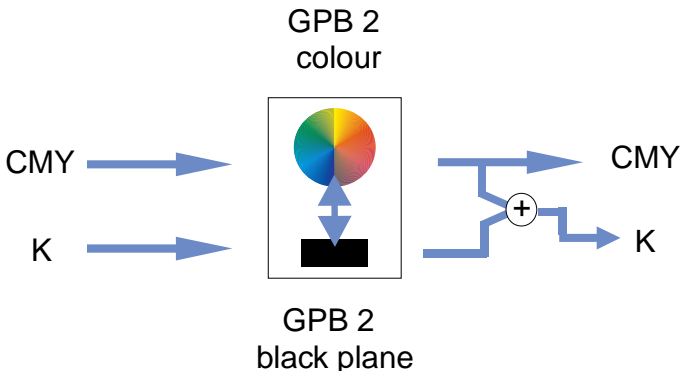
The *Print Controls* menu provides additional controls for the user to assist in setting up the output print conditions from Graphic Paintbox 2. The facilities provided within the print controls menu provide for the addition of a black profile, if required, but this will be without modelling black, UCR and GCR controls.

# CMYK OVERVIEW

Where no K channel exists in the input data, an additional refinement to the process allows a K output to be generated from the CMY input data, to define a simple reinforcing black for printing:



Further options exist to allow the black plane to be added to the K generated by the CMY table. This allows for the construction of sophisticated output K channel data combining input, CMY generated and creative K components:



All the settings and tables created during this process can be saved to the *Library* for further use.

The main disadvantage of this process is that it may be inconvenient when attempting complex retouching and montage work. It cannot provide a perfect reconstruction of data scanned with UCR and GCR as these cases present many ambiguous conditions that make the representation of colours difficult. Also, there is no possibility of taking account of the modelling black generated by the scanner as part of the colour analysis process, leaving some colours and textures looking flat.

In cases where data is taken from a variety of sources, there will be a need to produce a single output combining the final printing conditions, which may not be represented in any of the images used to compose the final image. For this purpose, Graphic Paintbox 2 is supplied with a more sophisticated CMYK handling feature, identified as CMYK.

# Graphic Paintbox 2

## CMYK

In understanding the CMYK option, it is useful to reflect on the limitations of the CMY(K) operation.

The CMY(K) method produces a good facsimile of the input ink values and scanning conditions to the output file. Although this is ideal for a reprographic based machine, it is too restrictive a method for a system designed to cover the multi media needs of traditional ink printing, rgb scanning for transparency retouching, motion picture film and the picture coding methods used for television broadcast applications.

To be able to blend images from any combination of these sources together, it is necessary to convert each to the internal colour space of Graphic Paintbox 2. This is performed by the CMYK option. In effect, the CMYK option operates as a colour analyser and conversion system.

As a colour conversion system, the CMYK option offers great flexibility in handling CMYK data produced using the clients scan set-up for 'dot gain', UCR, GCR and modelling.

In operation, the CMYK input data is analysed to determine the colour that would appear on the printed page. This colour is then represented digitally in the Graphic Paintbox colour space. Therefore, inside the Graphic Paintbox 2, colours from all input types can be mixed with the minimum of user intervention.

On output the colour is converted to C\*M\*Y\*K. This represents the printed colour using an algorithm which calculates on the basis of the smallest amount of black ink. The \* indicates that the output ink weights may not equal the input ink weight, but most importantly, the colour will match.



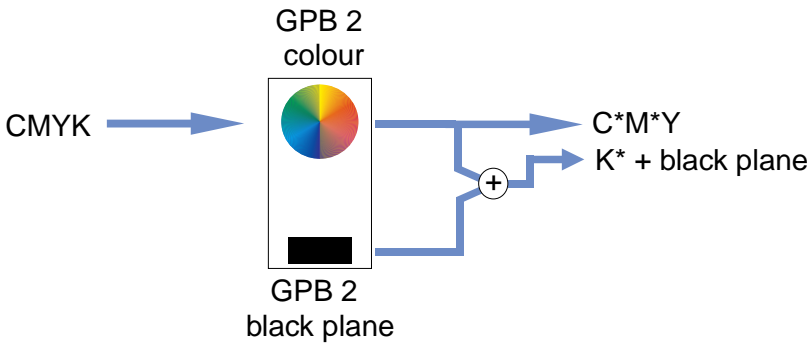
The change between CMYK input values and C\*M\*Y\*K on output will have its largest effect on input colours containing black. These can often be represented by many ink combinations and differing levels of black. Colours which can only be represented by the use of black are represented as such. Using this principle, any input image data can be mixed regardless of the scanner setup. Output to C\*M\*Y\*K is made common to all.

# CMYK OVERVIEW

The print controls menu, available under the CMYK option, provides a wider range of functions which can be used to control the final output conditions.

The basic C\*M\*Y\*K output ranges to 400% ink weight and as such may not be acceptable for final printing. The *print controls* menu (*See “Print Controls”*), provides options for UCR, GCR and dot gain facilities, which will enable the setting of a unified print environment for the composite output image.

This mode of operation does not prevent the user generating additional black elements for the black plane. As with CMY(K), extra detail can be added to the computed black through black addition on output.



# Graphic Paintbox 2

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## Summary

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The CMYK option for Graphic Paintbox 2, permits users to input reprographic image information in a controlled way to suit the task in hand. The two methods available are designed to have differing strengths, to give an overall breadth and flexibility to their operation. This is shown in summary, below:

### A CMY(K) APPLICATION

#### Advantages:

- i CMYK in = CMYK out.
- ii K channel held in its own plane.
- iii Keeps the original scanner profile.
- iv Allows mixing of Pantone type process colours.

#### Disadvantages:

- v Cannot correct for UCR and GCR input conditions.
- vi Modelling black cannot be correctly represented.
- vii On screen colour representation is less accurate.
- viii Is not colour space independent.
- ix Black generation on output is based on re-enforcement with no modelling.
- x Limited print control possibilities.

### B CMYK APPLICATION

#### Advantages:

- i Will accept CMYK data from colour sources regardless of scanner setup for UCR, GCR, modelling and dot gain.
- ii On screen colour representation is good.
- iii Provides a unified colour space for mixing images from other sources.
- iv Generates modelling black automatically.
- v Has a wide range of print controls on output.

#### Disadvantages:

- vi Does not generate matching ink weights between input and output.

# COLOUR CORRECTION

## COLOUR CORRECTION

### Overview

The colour correction functions enable changes to be made to the colour 'range' or colour 'balance' of a whole image, or within selected areas of that image.

The principle colour correction functions are found within the *Painting* and *Colour* main menus.

The *Painting* menu gives access to a variety of tools which can be used to paint directly onto the 'current image'. Among these tools are the *wash* and *shade* facilities:

### Wash

This function can be used with any of the brush types (*paint*, *airbrush*, *chalk*) and with any size of brush, to effect a change directly upon the chrominance (colour) of an image. This change will be applied to both the *hue* and *saturation* of the colour, while leaving the luminance (the brightness or *shade* detail) unchanged.

**Note:** When a colour is selected it should be remembered that it will be presented in this function as a "dilute" solution. For example, a dark blue will be applied as a luminous turquoise *wash*.

This graphics tool enables delicate water-colour illustration techniques to be applied, and is also useful for re-colouring images without affecting the underlying line and shade structure.

It is important to note that selecting Black, Grey or White to use with *wash*, will result in reducing the area of the image to which it is applied, to monochrome. If the requirement is to darken or lighten an area of image then the *shade*, not the *wash* function, should be employed.

# Graphic Paintbox 2

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## Shade

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The *shade* function is used to alter the luminance (brightness) of an image without altering the chrominance (colour).

When *shade* is selected, whichever colour is currently on the brush will have no chromatic significance. Instead it represents a shade which will be either lighter or darker than the area being retouched.

The *shade* function can be used for both creative and retouching work, and is used to alter the luminance of an image when you do **not** wish to alter chrominance.

*Shade* can be applied with any of the brush types (*paint*, *airbrush*, *chalk*) and with any size of brush. The continued application of shade will have the effect of balancing the image to the luminance selected.

The luminance of the *shade* function can be altered by taking a luminance from the palette; ie a brighter or darker shade of colour from the colour pots, from a colour mixed in the palette area or the luminance of a colour entered numerically into the colour value boxes of the palette. Alternatively a *shade* can be taken directly from the image, by placing the pen onto the required luminance section of an image when the palette or menu is displayed.

By moving the pen across an area of image (with a menu displayed), an 'average' luminance will be calculated and can be used for the *shade* operation.

*Shade* is applied as a permanent change to the current image; ie as it is applied, the change in detail is stuck down. The *mask* facility can be used when applying *shade* to protect areas that do not require amendment. A soft edged mask can also allow the gradual introduction of *shade*, when the image contains graduated detail.



# COLOUR CORRECTION

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## The Colour Menu

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The *Colour* menu functions can be used for both retouching and creative work. They can be used for example to colour 'match' images produced from different sources, or where the ambience between images needs to be adjusted so that they can be composited with or without dramatic contrasts in lighting and colour.

When used to the extreme, dramatic effects can be produced, such as inverting luminance to produce a negative image.

The chrominance of the image is controlled with *hue*; a 360 degree circle representing all colour possibilities at a given contrast, brightness and saturation (*See the "Colour - hue" menu*).

The *Colour* menu functions can be constrained by the use of the *mask* (ie with *use - mask* selected), so that only specific areas of a given image will be affected by a colour alteration or effect.

Unlimited experimentation is possible on the 'current image'. As an aid to experimenting, the *show* function will recall the original 'current image' without any alteration of its colour parameters, for as long as it is held down (note that this only applies to images which have not been permanently changed with the *do all* or *do area* functions).

Alternatively, the original image with its original colour settings, can be retrieved by selecting *orig - all* (ie 'original all').

By selecting *orig* and then tapping on a single parameter box in this menu, it is possible to reset just that box to its original value, while retaining any changes to the other *colour* parameters and therefore any changes to the current image. In this way, colour corrections can be refined as required.

A - E

# Graphic Paintbox 2

## A MATCH

The *match* function within the colour menu brings together several complex controls in a very simple operation, to allow a linear colour translation from one image colour to a new, user defined colour. This function might be used for example, to match skin tones or to complement the ambient lighting between different images.

With the selection of parameters available to control the *match* (ie fix luminance/chrominance, hue contrast/brightness, cast & gain), very subtle effects can be achieved as well as extremely dramatic ones.

At the simplest level the *match* function is controlled by the *from* and *to* boxes.

The *from* box indicates the colour that is to be changed and the *to* box defines the colour it is to be replaced with.

When *from* is selected, the colour pot below this box in the menu is active. If the pen is moved into the image area and tapped down onto a point, the colour underneath the pen at that point is placed on the end of the pen and directly into the *from* colour pot. At the same time, the numeric Hue, Saturation and Luminance boxes below the colour pot will also update, defining the colour selected in percentage values.

If it is difficult to pick a colour directly from the 'current image', an alternative method of selecting the *from* colour is to recall the palette (ie either swipe up/down off screen or select button 3 of the Grip), and select or create the colour from there. This colour can be transferred onto the pen and then the menu recalled to transfer the pen colour into the colour pot. The numeric boxes can also be entered individually to define a *from* colour numerically.

Once the *from* colour is set, selecting the *to* box allows the process to be repeated for the *to* colour; ie the colour pot below the *to* box is opened to allow the new colour to be defined, using any of the methods already mentioned for the *from* box.

When a new colour is entered in the *to* box, the current *match* set-up is immediately applied across the whole of the 'current image'. The *mask* is very useful in this menu therefore, to constrain the application of any colour *match* to only the required areas of image. The *mask* should be defined before entering this menu and then applied with the *draw - mask - use* functions.

The new colour (the *to* colour), is applied to the 'current image' in a manner determined by the current selection of the other *match* functions; fix luminance/chrominance, hue contrast/brightness, cast & gain. These functions can be selected individually or in combination, to achieve a variety of results.

# COLOUR CORRECTION

## B HUE

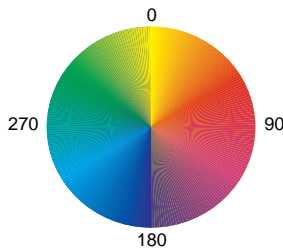
The *hue* control offers the ability to control the 'overall' colour in an image.

This control can be compared to the technique used in the pre-press industry and often referred to as 'move body', where some colour information is moved from one plate to another.

*Hue* can be further described along with *saturation* and *glo* (glow). *Saturation* refers to how dense the colour is or the amount of pigment present, combined with the brightness or 'glow' of the colour, referring to the amount of complimentary colours present. Setting the saturation to zero gives a black and white image.

*Hue* can be used to correct errors in an image or be applied to create a special effect. By increasing or decreasing *hue*, all other image elements such as tonal values and *cast* will remain the same while each of the colours present in the image can be made to change in relation to each other to produce more subtle or exotic colours. The significance of *hue* is that image detail will always remain the same.

Hue Wheel



*Hue* control is based on the Hue colour wheel shown opposite.

By stepping through the circle (ie 360 degrees), the appropriate colour change in *hue* can be determined.

In normal operation, the brightness of each colour will alter as the *hue* 'wheel' is rotated, according to the dominance of each original colour. However, by selecting & - *glo*, *hue* and *glo* are linked so that the system will automatically make the adjustments to ensure that each colour in the 'current image' will retain the same dominance as displayed in the composition, before any *hue* correction was applied.

# Graphic Paintbox 2

## C CAST & GAIN

*Cast* and *gain* offer two different types of colour control which can be used both to correct colour image problems or to add colour effects.

The *cast* function can be regarded as viewing the image through a coloured filter of a particular colour, at a particular percentage level affecting all the colours present. *Cast* can be used to apply colour correction to an image as an incremental or decremental value, with a start percentage of 0%.

*Gain* can be viewed as an effect created by altering image colours directly, as if mixing more red, green or blue to a desired percentage, into the colours already present. *Gain* values are expressed as 100% of red, green and blue and then increased or decreased as required.

## D CONTROL

Within the *control* sub-menu a *prepare* option is presented, which allows the artist to use the colour cube to change various aspects of the appearance of the image. These adjustments can be applied automatically. All of the effects involve creating a control plane in the backstore, which is used by the colour cube to apply the effect.

## E EFFECTS

The *effects* menu offers four image effects, *sharpen*, *blur*, *poster* and *map*. *Sharpen* can be applied to give an impression of sharpening an image, while *blur* offers three blur options: *directional*, *symmetrical* and *streak*. *Poster* converts the current images colour components into steps to give the effect of poster paints; while *map* uses the colours from the colour palette to redefine the luminance content of the current image.

## F CURVES

The *Colour - curves* menu allows the manual adjustment of RGB, Greys and CMY/CMYK (where applicable) to build user defined colour corrections.

The extensive range of colour correction tools found within this menu are discussed separately in the next section of this chapter - "*Colour Curves*".

**Note:** The *CMY/CMYK Colour - curves* menu functions are only available when the 'CMYK' option has been separately purchased and installed.

## COLOUR CONTROL

### Overview

The *Colour - control* menu functions allow the operator to automatically adjust the appearance of the current image using the *prepare* option, which creates a control plane in the backstore for manipulation of the system's colour cube.

Painting	match	prepare
Colour	hue	photo fx
Masks	cast	texture
Library	gain	grain
Pasteup	control	light
Setup	effects	
	curves	
	print lim	view orig

A *prepare* sub-menu is activated, offering the following options: *from mask*, *from pic*, *from grain* and *set-up usm* (see the next page for descriptions). After one of these options is selected, the artist can go on to activate one of the effects (*photo fx*, *texture*, *grain* and *light*).

Painting	match	prepare	from mask
Colour	hue	photo fx	from pic
Masks	cast	texture	from grain
Library	gain	grain	setup usm
Pasteup	control	light	
Setup	effects		
	curves		
	print lim	view orig	

#### i **From mask**

This box should be highlighted if a mask is to be used to control the application. The area of the mask to be used is then selected with the *do all* or *do area* boxes. If *do area* is desired, the mask data from the specified area is repeated across the entire image in a tiled fashion (which can be very effective for creating grains, textures or motifs).

# Graphic Paintbox 2

## ii From pic

Allows the colour cube to be controlled by the detail in the image. To obtain the sharpest detail in the image to be extracted, it is recommended that the *detail* box should be set to a small number. Detail can then be placed in the control plane by using the *do all* or *do area* options. **Note:** The *do area* in this instance will not tile the detail. To apply an effect, select the required effect under *photo fx*, *light* or *texture*.

## iii From grain

Activates a roller menu offering three Quantel grain sets (*very fine*, *fine* and *medium*), which are automatically tiled across the entire image.

## iv Set-up usm

Allows detail to be extracted from the image, with the finest detail to be enhanced by usm gained through the smallest aperture. A default value is automatically applied to the remainder of the control plane which has no effect during usm processing. The menu will switch to *photo fx* (with the USM LUT selected) as soon as the detail has been prepared.

The aperture box offers a 0-16 range, with 0 retaining a sharply focused image, while 16 offers a fully defocused image.

## v Make mask

Selecting *all* with *make mask* highlighted will copy the entire control plane into the mask, replacing the previous mask.

## vi Show

Views any prepared effects in a monochrome image of the control plane. The *show* function works only while the pen is holding the button down.

## A APPLYING A PREPARED CHANGE TO AN IMAGE

default	show
gain	1.00
offset	0

### i Gain

Adjusts the intensity of the effect over a 0.01-10.00 range, effectively increasing the variation in the control plane. This is particularly useful when applying grain to an image, as the visibility of the grain is affected.

# COLOUR CONTROL

## ii **Offset**

Enables the brightness of the image in the control plane to be adjusted. For example, if a mask has been created to warm up a section of the image, the offset value can be adjusted to make the entire image warmer or cooler (including the chosen area).

## iii **Default**

Sets the control plane to a neutral value.

## iv **Reset**

Allows the *offset* and *gain* boxes to be reset to their default values, if pressed in conjunction with *all*.

## v **Show orig**

When this box is selected the image can be seen without the preview of the change.

## vi **Photo fx**

This activates a roller menu offering a number of colour effect LUTs (see below), which can be used to apply an immediate effect to the image. As the menu bar is scrolled through a blue paint indicator (to the right of the menu box) may appear, signalling that the particular effect highlighted is available for use as a painting tool. The *lose* box allows selected effects to be deleted from the menu (but not the Library).

- Negative V3.1. Will invert the colour values of the image, where the control plane is white. The image will remain unchanged if the control plane is black. At midrange the image contrast is effectively wiped to zero, and the image looks grey; the contrast will then increase (although the colour becomes inverted) as the control plane moves from midrange to white.

The *do all* or *do area* boxes can be used once the desired effect has been achieved.

- USM V3. Offers a blanket image sharpening effect. This can be adjusted more precisely in the *prepare - from mask - setup usm* mode.
- Colour Up/Dn V3. On a scale of 0-255 this option is a process which increases/decreases the saturation of the image. The control plane default is midrange. If 'banding' occurs it is advisable to use of the following two colour effects (*Colour Up* or *Colour Dn* instead).

# Graphic Paintbox 2

- Colour Up V3. Uses the entire 0-255 range to saturate the image with colour, with saturation increasing the darker the image in the control plane.
- Colour Dn V3. Uses the entire 0-255 range to desaturate the entire image, with saturation decreasing the darker the image in the control plane.
- Warm V3. Affects the colour temperature of the image, washing a warm light over the image. A daylight image can effectively be lit down to a colour temperature of around 3,200 Kelvin.
- Cold V3. Affects the colour temperature of the image, washing a blue light over the image. A daylight image can effectively be lit to a colour temperature of around 9,000 Kelvin.
- Warm/Cold V3. This increases/decreases the colour temperature of the image, with darker areas increasing the temperature and lighter areas decreasing it. The control plane default is midrange.
- Light Up V3. Increases the contrast of the image, with contrast rising the darker the image in the control plane.
- Light Dn V3. Decreases the contrast of the image, with contrast reducing the darker the image in the control plane.
- Light Up/Dn V3. Increases/decreases the lighting in the image, with the contrast reducing on darker images and rising on lighter images. The control plane default is midrange.
- Difference V3. This function analyses the control plane data and affects a black and white change in the image.

## vii **Texture**

Enables a roller menu of LUTs, with a number of boxes controlling the application of the LUTs to the image. The effects offered are:

- Luma. Applies the texture only to the brightness of the image.
- R, G, B. Applies the texture only to the selected colour separation of the image.



# COLOUR CONTROL

- All. Applies texture to the red, green and blue separations of the image. A random offset is applied to the position of the control plane before processing occurs, so the function is different than just applying red, green and blue in sequence.

This feature is particularly useful when applying grain, as the grain appears different in the three separations.

Only a luma change will be seen on the image if a preview is carried out with *all* switched on.

- Grain. Applies a grain LUT to the entire image.

## viii **Grain**

When selected, a control file is loaded dependent on the type of grain previously used, and allows a grain to be applied to the image by selecting *prepare - grain*.

## ix **Light**

Uses the selected colour mix (in the box to the right of *light*) to affect a light change with the response of either *addition*, *replace* or *add + rep*.

- Addition. This would give an effect of, for example, a green light being added to light that was already present. An example would be if a green light was turned on in a normally lit room, then the effect of the colour change would be that colours that absorb green would not be changed, while colours that reflect green would change.
- Replace. This effect would be as if all the present light was replaced by a different coloured light. An example of this would be entering a very dark room and switching on a green light. The only light source would be a green one, therefore the only colour that would be reflected would be green. A second example would be taking a snap-shot of somebody standing in a photographic darkroom using a red safety light. The image would be made from red shades with differing luminance values. The shade of red would depend on the underlying colour. If the colour reflected red the shades will appear lighter, but if the original colour absorbed red then the shade would look almost black.

# Graphic Paintbox 2

- Add + Rep. This function will allow a bi-directional interactive brush to be used. By selecting this function and choosing a colour the control brush can then be selected in the *Painting* menu. When painting with + brush, the user will be adding a replacement colour correction, and - brush will give an addition effect.

Many of these options within the *Light* menu can be applied by painting using the *ctrl paint* in the *Painting* menu. The *Colour - control* menu must first be used to select the required change: either by selecting *photo fx* and then one of the LUTs which offers a painting option; or selecting a colour from the colour palette and depositing it in the colour box (next to *light*). Alternatively, the *light* box can be activated to select a colour already there. When in the *Painting* menu a box next to the *ctrl paint* button will display the name of the LUT being used. If the LUT box displays 'undefined', do not use *ctrl paint*.

When *ctrl paint* is selected, a new control plane is created and initialised to the neutral value for the selected LUT. The control plane is completely separate from the one used in the *Colour - control* menu, so there is no need to use *prepare* or *default* in the control menu to initialise it.

Painting on the image now alters the new control plane and the image is processed through the cube. The + and - boxes on the menu (or the grip) can be used to control whether painting makes the control plane brighter or darker (it cannot be viewed directly).

Button 3 on the grip allows the image to be viewed without the effect of *ctrl paint*. To make the effect of the *ctrl paint* action permanent, press the *finish* button. If this is pressed while *and mask* is highlighted, the control plane in the areas of the image that have been altered will be pasted into the mask.

If *finish* is selected when *remove* is highlighted, the areas in the image affected by *ctrl paint* will be removed from the mask.

## COLOUR CURVES

### Overview

The *Colour - curves* menu functions provide an extensive series of controls that allow user defined colour corrections to be created for *RGB*, *Greys* and *CMY/CMYK*. The *RGB* and *CMY(K)* functions allow corrections to be performed on individual or multiple separations while *greys* offers control of the current image through five 'tone' points and provides additional *curve*, *grey* and *zigzag* controls.



See Chapter 3, "Masks Menu".

The principle means of control in each menu is via a control graph. A small reference display graph in the menu area offers limited control functions but details the current curve set up for the selected function. This graph can be enlarged by selecting *maximize*. The 'maximized' control graph offers a host of additional functions. These features are described at the end of this section.

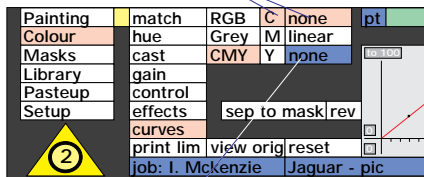
First we examine those aspects of operation which are common to the various sub menus:

### A HIDING SEPARATIONS

When working in *RGB* or *CMY(K)* modes, it is possible to entirely remove selected separations from the current image. This is achieved with the *none* menu function.

First, highlight the separation that is to be hidden and then tap on the *none* box. The system updates automatically; ie there is no need to select *do area* or *do all* to view the result of removing the selected separation.

With *C* highlighted, selecting *none* will remove the Cyan separation (the cyan display graph line will also disappear)



Details the current function; ie  
*none* (to remove a separation)  
*linear* (to produce a linear graph)  
*user* (when the graph is manually altered)

# Graphic Paintbox 2

A separation will remain hidden until *linear* is selected or until the graph is manually manipulated to produce a *user* customised graph.

More than one separation can be removed at any one time, and the current set up can be processed without the indicated separations by selecting *do all* or *do area*.

## B COMPARING CORRECTION EFFECTS (‘VIEW ORIG’ & ‘USE PATCH’)

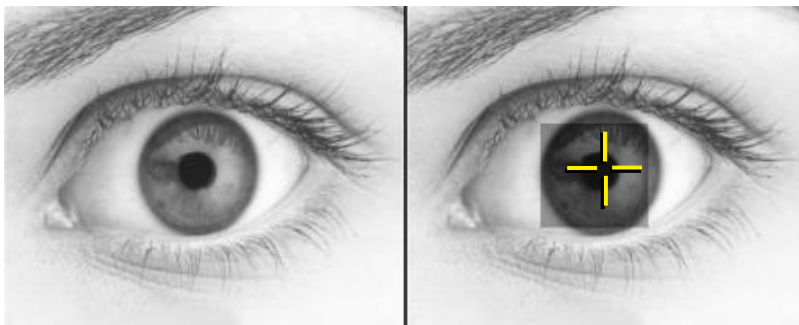
After changing the *curve* menu parameters it is possible to perform a comparison with the original image before permanently applying those changes with the *do all* or *do area* functions.

The current image will appear on screen with the current *curve* parameters applied. To view the original image (ie before the parameters were altered), the *view orig* box is selected. This will remove the current *curve* changes from the current image for as long as *view orig* is held down. This function can be repeated as many times as is necessary for comparison purposes, until *do all* or *do area* is selected to permanently apply the indicated changes.

As well as the *view orig* function, *use patch* offers a means of testing the effect of any current parameter changes from the default, on a small test square over the current image.

When *use patch* is highlighted, moving the pen into the image area and pressing down on a point will produce a square box around the pen, applying the current parameters to the area within that box.

The picture below left, shows the original image before *use patch* is applied. The image on the right shows the same image with *use patch* selected and the pen pressed down to display the example square:



The *use patch* function can also be used to make real time adjustments to parameter boxes while still only viewing the effect within the example square.

# COLOUR CURVES

For example, with the *from* or *to* parameter boxes open (ie pink), and with *use patch* selected, moving the pen into the image area, pressing down on a point and then dragging the pen will recall the *use patch* box (which will remain stationary at the first point selected) and will amend the current parameter value at the same time.

Dragging the pen up and to the right will increase values, while movement down and to the left will decrease values.

The *use patch* box will adjust to the pen movements (ie the parameter value changes), in real time.

When *use patch* is de-selected, the entire image will be updated to the current parameter settings.

## C RESETTING THE CURVE MENU FUNCTIONS

The *reset - all* functions within the *Colour - curve* menu are available to reset any or all of the parameter boxes.

After adjusting any of the menu parameters from their defaults, selecting *reset* and tapping on an individual function box will reset that box to its default value.

To reset all of the parameter boxes at once, *reset - all* can be selected.

**Note:** Using the *reset* function after processing an image with the *do all* or *do area* functions will have no effect on the image, although the parameter boxes will still be reset.

## D 'SEP (SEPARATION) TO MASK'

The *separation to mask* facility allows a black and white mask to be generated from those areas of the current image where a selected separation appears.

The *separation to mask* function is found in both the *RGB* and *CMYK* sub-menus although they operate in slightly different ways:

### i *RGB - sep to mask*

The currently highlighted *RGB* separation (ie R, G or B), is used to generate the black and white mask. Where more of the selected separation appears in the current image, **more white appears**. Where less of the separation occurs, more black appears.

# Graphic Paintbox 2

## ii CMYK - sep to mask

The currently highlighted *CMYK* separation (ie C, M, Y or K), is used to generate the black and white mask. Where more of the selected separation appears in the current image, **more black appears**. Where less of the separation occurs, more white appears.

When creating a mask with the *sep to mask* function in either the *RGB* or *CMYK* sub-menus, black is not added into the original image. When *sep to mask* has been used, the *from* section of the densitometer will continue to display the original 'K' value (ie black). The *to* densitometer box will display the percentage proportion of black in the mask.

In both of the *RGB* and *CMYK* sub-menus, a *rev* (reverse) function is available in conjunction with *sep to mask*. As its name implies, when *rev* is selected the current areas of 'masked' and 'unmasked' areas of image will be reversed. Mask can then be used for selective image correction.

## E CMY 'MULTI' MODE

In the *CMY curves* sub menu, the additional *multi* function is accessed when *selective* is highlighted.

The menu functions recalled with *multi* are used to apply user defined colour corrections to specific *selective* colour areas and specific colour separations, over the current image.

	do all	selective	draw
	do area	less more	rev draw
maximize		softness 0	
		reset	undo wipe
	multi	store 1 of 1	
	use patch	solo	clr use
from	C 0 M 0 Y 0 K 0		use
to	C 27 M 33 Y 0 K 26		swap
			4400 x 2

After highlighting the *multi* function (ie *selective - multi*), tapping the pen down in the image area will prompt the system to look for similar points of the same colour across the entire image; ie a selective colour search is performed. To increase the area of selected colour, further pen presses on new colour points can be made.

When a sufficient 'selective' colour area has been defined, amending the parameters of the colour curve graph will prompt the system to perform the colour correction **only** on those areas of colour that have been selected.

It should be remembered that the image as it appears on screen in *multi* mode, is as it will appear on output.

**Note:** When a new area for correction is required, the *selective* function should first be cleared by selecting *reset*.

# COLOUR CURVES

The enlarged *maximize* graph is not available when working in *multi* mode. The *selective* and *maximize* functions are mutually exclusive; ie selecting one will de-select the other. In addition, the *sep to mask* and *rev* functions will be removed from the menu while working in *multi* mode.

Once the parameter changes have been made to your satisfaction, the colour correction can be processed (ie permanently applied to the current image), with the *store - do all* functions.

The *store* function processes the current colour correction over the current selective colour range and saves the result. This operation assigns an incremental value to each *store* process. The current value or layer can be identified by the value in the green numeric box found to the right of *store*. Up to 26 different colour corrections can be held at any one time and each of these possible 26 layers can be individually edited. To return to a previous layer for editing, that layer's number is entered in the green numeric *store* box.

Each *store* process will also increase the total number of colour corrections applied to the current image (or since the *clr* function was last selected to reset the *multi - store* function), indicated in the associated blue numeric box (ie of 6).

Total number of layers generated

Current layer

	do all	selective	draw
	do area	less more rev	draw
maximize		softness 0	
	reset	undo	wipe
	store	4 of 6	
multi	use patch	solo	clr use
from	C 0 M 0 Y 0	K 0	use
to	C 27 M 33 Y 0	K 26	swap
			4400 x 2

Where more than one correction layer has been created, *solo* displays only the current layer

Removes all saved colour correction layers

When a number of *store* operations have been performed and you wish to edit a specific layer, that layer is first selected by entering the layer number in the green 'current layer' box. With *solo* selected, only that layer will be shown. If *solo* is de-selected, the current layer is shown along with all the colour correction information for any layers **below** that number, but without any of the stored colour correction information for layers above that number.

For example, if 5 colour corrections have been stored, returning to the third colour correction (by entering 3 in the *store* numeric box) and de-selecting *solo*, will display the corrections for layer 3, layer 2 and layer 1, but not those for layers 4 and 5. To remove all stored information, the *clr* function is selected. This resets the system to a new layer 1 and resets the total number of stored layers to 1 (ie of 1).

# Graphic Paintbox 2

## Working With The Display Graph

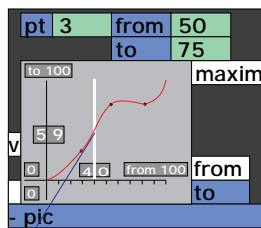
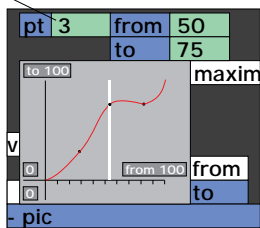
The small reference display graph shown in the *curve* menu, gives a representation of the current parameter effects over the current image. This graph will update as changes to parameter boxes are applied, describing the curve between all current points. This initial display is intended principally as a guide and reference, although some basic manipulation is possible for points that already exist on the graph.

There are three principle methods of amending the position (and therefore value), of a given point on the reference display graph.

- i Method one is to use the pen to select a point on the graph and then, while maintaining contact, drag the pen up or down / left or right to move the points position. This method should not be used when delicate movement is required, but is useful for quick, 'rough' adjustments, which can be refined later.
- ii Method two involves using the *pt's*, *from* and *to* menu boxes, found above the display graph in the menu. Selecting a current point by pressing the pen onto the graph, will produce a display of that points number (*pt*) in relation to the zero position on the graph, and its current parameter setting (*from/to*). The *from/to* value can be altered by using the keypad, displayed when a green numeric box is selected.
- iii Method three involves using the pen to scroll up or down through potential parameter values for a selected point. With *use patch* selected, the image will update as the pen is dragged and so the effect that will be produced can be seen immediately. With *use patch* de-selected, the image will update only when scrolling has stopped.

The currently selected curve point.

The default point 1 is at 0/0 on the graph.



Pressing and dragging the white guide line, will display the values for the intersection of the line and the current curve; ie the intersection point in the example above is 59 / 40.



# COLOUR CURVES

There are two means of viewing a larger version of the reference graph in the menu display. The first is to drag the edges of the reference graph to a new size (*see 1 below*).

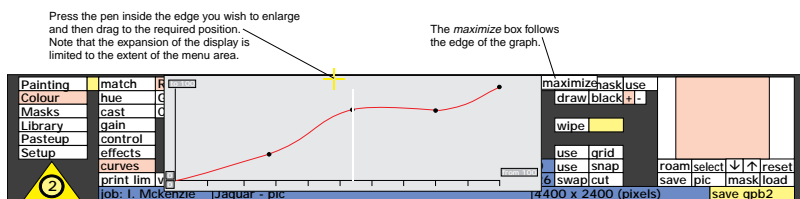
Alternatively, *maximize* can be selected. Selecting *maximize* will remove the current image from the screen and replaces it with an enhanced view of the display graph, including a number of additional features to allow the graph to be manually amended (*see 2 which follows*).

## 1 **Manually stretching the display graph.**

To manually expand the reference display graph in the menu area, move the pen just inside the graph edge that you wish to expand, press down and then drag the edge to the required position.

In this way each edge of the graph can be expanded, although expansion is limited to the extent of the menu area; ie the graph can not expand into the image area.

No additional features are made available by expanding the reference graph, this is simply a means of viewing the graph in more detail.



Menu boxes covered by the graph display can not be accessed - resize the graph to access those boxes.

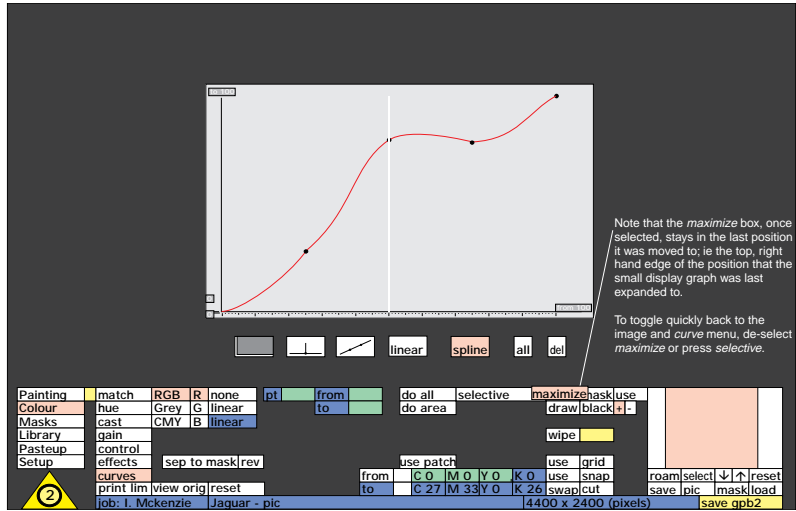
It should be noted that were the graph is expanded and then covers over other menu functions, those functions will no longer be accessible until the graph is manually resized to reveal them again.

# Graphic Paintbox 2

## 2      *Using maximize.*

To add or remove points and to refine the graph in more subtle ways than is possible with the reduced, reference graph, the *maximize* function can be selected.

Selecting *maximize* will produce a large screen version of the reference graph, hiding the current image and giving access to additional graph control functions:



In the following sections (A to C), various ways in which the graph can be manipulated in *maximize* mode are examined.

### A      **MANIPULATING THE MAXIMIZE GRAPH**

To allow the graph to be customised to the user's own specifications, it has been designed to be fully interactive when in *maximize* mode.

When *maximize* is initially selected the graph displayed will be an enlarged version of the smaller reference graph found in the *curve* menu. Any parameter changes that were applied in that menu will still be applied in this display. Whereas the small graph is primarily a reference diagram, the full size graph is designed to offer a host of ways in which it can be amended, from changing the shape of the entire graph to precise, individual alterations on specific points.

# COLOUR CURVES

Two methods of moving an existing point (ie node) are offered:

- i Method one involves using the menu *pt* (point) function to select the point that is to be re-positioned.

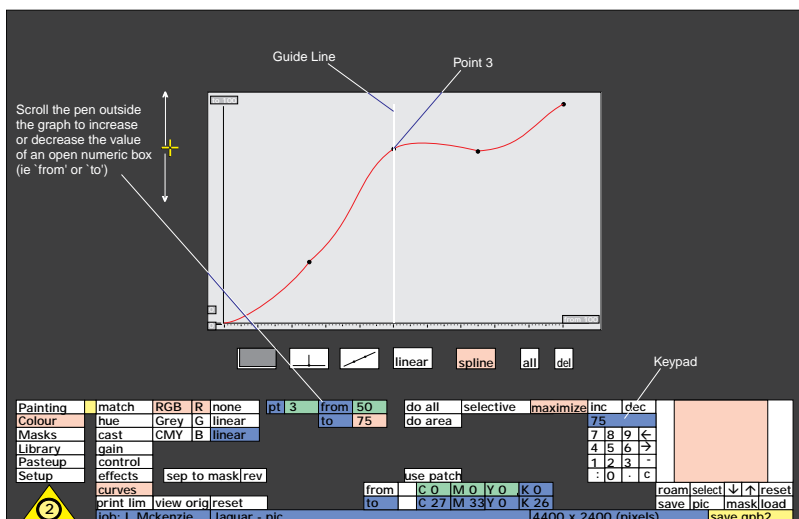
After selecting the green box to the right of *pt*, the number of the point that is to be moved is entered via the numeric keypad. This selects that point as the current point, indicated by the white guide line jumping to that position. The *from* and *to* boxes can then be used to move that point's position in the X and Y axis.

The value in the *from* and *to* green numeric boxes can be adjusted by entering a value direct from the keypad, or by opening one or other of the *from* or *to* boxes and then scrolling the pen in the screen area, outside the graph.

Movement up and to the right will increase a value and movement down and to the left will reduce the current value.

- ii Method two involves placing the pen directly onto a point and then, while maintaining pressure, dragging the point to a new position.

Some care should be taken when using this second method, as tapping down on the curve where no point currently exists will insert a new point (see "*Inserting & Deleting Points*").



# Graphic Paintbox 2

## B INSERTING & DELETING POINTS

### i Inserting points

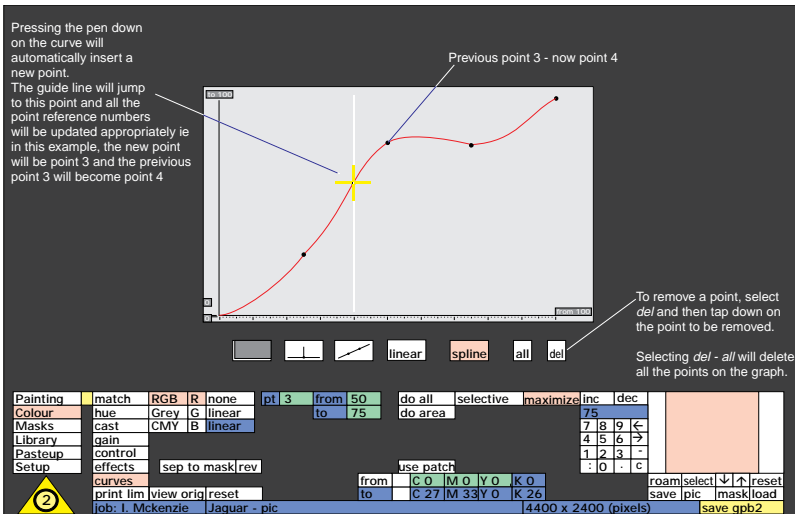
To insert a new point on the current curve, move the pen into proximity with the curve and then press down anywhere on the line. A new point will appear wherever the pen is pressed down.

Once inserted, a point can be dragged to a new position or moved with the *from* and *to* boxes.

When a new point is added, the *pt*, *from* and *to* boxes will update, describing the inserted point numerically. This inserted point becomes the current point.

For example, where a curve previously existed with five points or 'nodes', inserting a new point anywhere between 2 and 3 will prompt the system to update and renumber all subsequent points.

The new point will become point 3 (with its *from* and *to* position detailed in the menu as the current point). The previous point 3 will become point 4, point 4 becomes point 5 and point 5 becomes point 6.



**Note:** New points **cannot** be added by inserting a number greater than the current number of points in the *pt*'s box. Where 5 points currently exist for example, entering number 6 in the *pt*'s box will only prompt the system to jump to point 5; ie the last possible point. The greater number is redundant and will therefore be ignored.

# COLOUR CURVES

## ii *Deleting points*

To delete an existing point, the *del* box (found below the *maximize* display graph on the screen - not in the menu area), is first selected.

Once *del* is highlighted, pressing down on a point on the graph with the pen, will permanently remove that point.

Where several points exist on the current graph, it may be difficult to place the pen accurately on the point that is to be removed. In this situation it may be preferable to slightly change the order in which the delete process is performed.

The point to be removed can be selected using the *pt* box. This will prompt the system to move the white guide line over this point, highlighting it and therefore making it easier to identify and select with the pen. The delete (*del*) box can then be selected as before, and the pen pressed down on the highlighted point.

As with inserting a point, removing a point will prompt the system to adjust the numbering of each subsequent point.

To remove all the current points, select *del - all*.

A - E

# Graphic Paintbox 2

## C MAXIMIZE GRAPH - SCREEN FUNCTIONS



This toggle function switches the graph 'zoom' controls on and off.

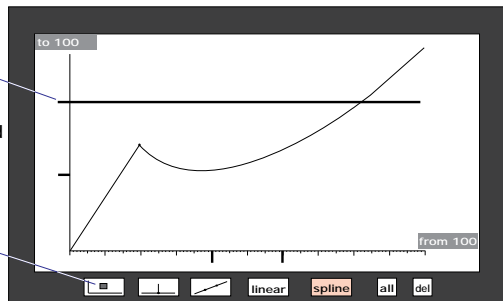
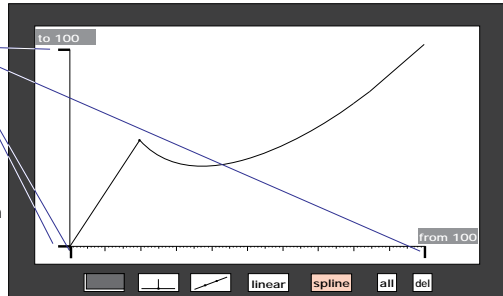
Operation of the graph 'zoom' function is as follows:

Four markers are positioned outside the graph - 2 on the X axis and 2 on the Y axis.

The markers are used to define an area of the graph which will be zoomed to when the graph zoom box is selected.

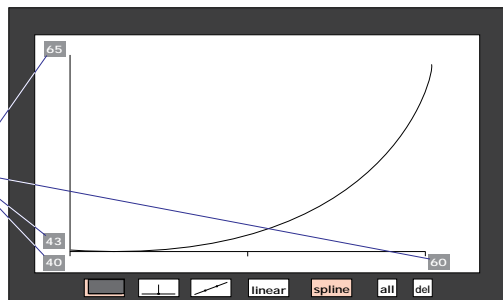
Pressing on a marker with the pen produces a solid black line over the graph. While maintaining pressure, drag the marker to a new position.

The area of the graph to be zoomed to will be represented by the area of grey in the zoom box.

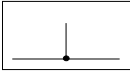


When the zoom box is selected (ie highlighted pink) the area of graph within the four markers will be expanded to fill the entire graph screen.

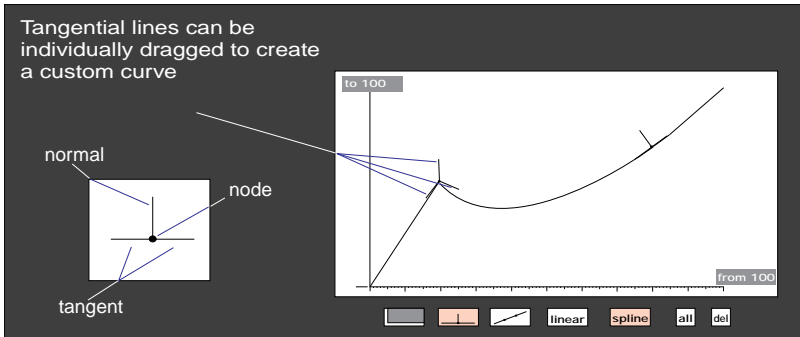
The markers are replaced with boxes detailing the points on the appropriate axis that the graph detail lies between.



# COLOUR CURVES



By selecting the 'tangent' function, the segments which make up a curve can be controlled by 'tangent' and 'normal' lines which will appear at each 'point' (ie node) on the current curve.



A - E

Pressing on and dragging a 'normal' will affect the line passing through the current point, both in amplitude and direction.

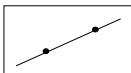
Pressing on and dragging a 'tangent' will only affect the curve emanating from that side of the current point.

If the 'tangent' function is still highlighted when *maximize* is de-selected, the tangential lines will also be displayed in the small, menu reference display graph.

The 'tangent' lines can also be manipulated in this smaller reference graph, although it should be noted that where multiple points exist on the current curve, the reference display can become very 'crowded' and is therefore not ideal for subtle manipulation.

'Fine-tuning' is best carried out by re-selecting *maximize* and working on the enlarged curve.

# Graphic Paintbox 2



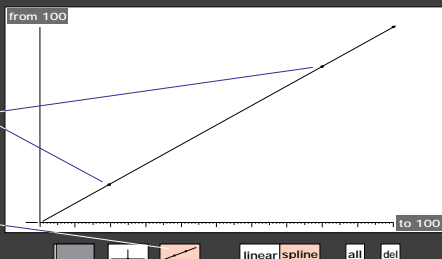
This box represents the 'mirror' function.

When selected (ie highlighted in pink), dragging or manipulating the current curve or graph from one position, will produce a mirror image of that action at the opposite side of the current curve; ie the action will be mirrored from a point half way along the current curve:

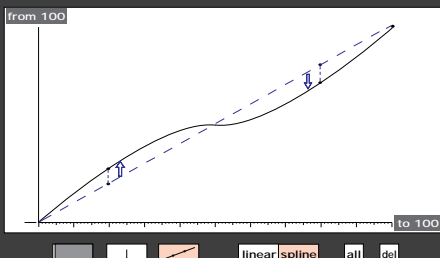
## Using the 'mirror' function

1. Selecting a point on the current graph will create a 'mirror' point on the opposite side of the graph

'Mirror' function



2. Dragging a point will also produce a duplicate movement of the opposite or 'mirror' point





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## Grey

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Grey offers the following sub menu features:

### A CUR (CURVE)

*Cur* (curve) gives the ability to adjust different tonal values or the 'luminance' of the current image, through complete control of the highlights and lowlights; ie controlling brightness and contrast at the same time.

Simplified, the system analyses an image in five tonal values: Total white, high tones, medium tones, low tones and total black. On the menu display graph, these points appear by default as:

Black (pt 1, 0)

Low Tone (pt 2, 25)

Mid Tone (pt 3, 50)

High Tone (pt 4, 75)

White (pt 5, 100)

Altering these individual points alters the tonal range across the current image. All the graph features work with grey curves.

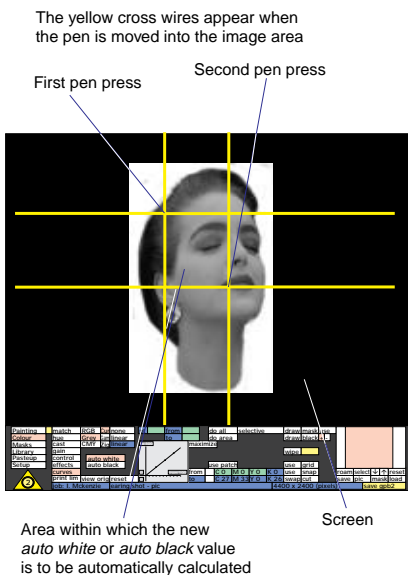
Selective and precise control can be maintained when altering the tonal values, by the application of *masks*.

The additional *auto white* and *auto black* functions, enable the definition of an area of image within which the system will scan to automatically determine a new 'high' or 'low' point, as appropriate.

This feature is particularly useful when for example images have been scanned too dark or too light, as they enable correction of these imbalances and so bring out detail that may have otherwise been lost.

With *auto white* or *auto black* selected, moving the pen into the image area and tapping the pen down will reveal the yellow cross wires. These are used to determine a box area within which the system will scan to determine the new global 'high' or 'low' light (ie depending on the selection of *auto white* or *auto black*).

# Graphic Paintbox 2



The first pen tap that revealed the cross wires, defines the first corner of the 'scan' area. While keeping the pen in proximity, the yellow cross wires can be dragged out over the required area of image and a second tap down will define a box, determining the extent of the image area that the system is to scan.

The system will automatically examine and calculate the new 'high' or 'low' point from within the defined area, adjusting the previous values as appropriate and applying the luminance change across the whole of the current image.

## B GAMMA

The *gamma* function controls the translation of brightness from input to output. This allows the mid-tones to be lightened or darkened without affecting the highlights and shadows significantly.

The *gamma* value defines the relationship between output density and original density across the mid-tones (ie changes in brightness).

Adjusting the *gamma* value by factors of '+' or '-' 0.10, can be very effective at 'fine-tuning' an image.

Increasing the *gamma* value will darken the shadows and lighten the highlights. A value of 1 is the default (ie no *gamma* correction is applied), while values greater than this increase the degree of correction.

**Note:** The *use patch* function allows the effect of a new *gamma* value to be seen on a small square of the current image without having to perform any permanent processing (See "*Comparing Correction Effects - Use Patch*", in this section).

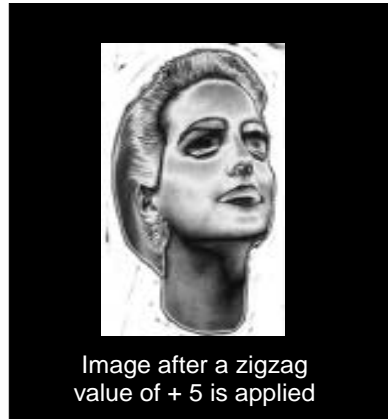
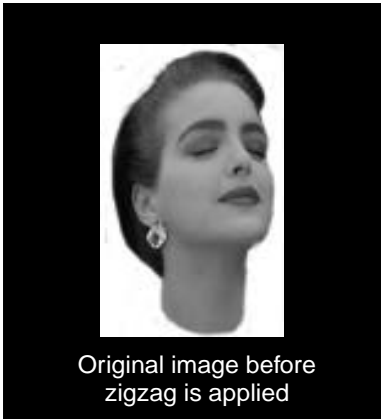
# COLOUR CURVES

## C ZIG (ZIGZAG)

The *zigzag* control is a tool that can be used to view the 'current image' with temporarily enhanced contrast. The degree of contrast to be applied is a manually determined value.

*Zigzag* is a useful tool when for example copying image content from one section of screen to another (ie using the *Painting - copy* function), to check that artefacts have not been introduced.

Positive *zigzag* values leave black as black, while negative values convert black to white.



Button 4 on the Hand Unit acts as a toggle to switch the *zigzag* function on or off in all menus aside from the *Setup* and *Full Page* menus, as long as no other button 4 function is active (ie the button 4 functions available with the *restore* or *mask* functions. )



*See chapter 1 Basics - Hand Unit - Push Button Controls for more information.*

As *zigzag* is not appropriate for use in the *Setup* and *Full Page* menus, it can not be accessed when they are selected.

# ***Graphic Paintbox 2***

## COLOUR EFFECTS

### Overview

The *Colour - effects* sub-menu offers an extended range of automatic effects which the user can apply to the current image, with some degree of manipulation. The effects offered are *sharpen*, *blur*, *poster* and *map*.

Painting	match	sharpen		
Colour	hue	blur	1.00	
Masks	cast	poster	dir	0.00
Library	gain	map	sym	streak
Pasteup	control			
Setup	effects			
	curves			
	print lim	view orig	reset	

#### i *Sharpen*

This function when selected, automatically applies an effect which gives the impression of having sharpened the image.

#### ii *Blur*

Offering a maximum blur factor of 50 (or 200 with *dir* selected), the blur function offers three possible blur options (see below). A small area of the blur effect can be seen if the pen is held down on the tablet.

- *Dir* (Direction). Offers a directional blur to be set up, which is useful for motion blurs. The box next to *dir* will define the direction, which is read in degrees (up to a maximum of 360 degrees), with 0 degrees being a blur to the right, while higher numbers will start to rotate the blur clockwise.
- *Sym* (Symmetrical). Offers an equal blur in the opposite direction to that set by the blur angle numeric box.
- *Streak*. Is a blur that will be applied with a stronger directional displacement effect.

**Note:** Large blur numbers can take a long time to process.

# ***Graphic Paintbox 2***

## COLOUR SPACE

### Overview

'Colour Space' defines the method that is used to create or modify colours in image processing and printing.

The system operates as a 'colour space independent' environment, but provides the appropriate 'colour space' controls where they are most suitable.

The system uses comprehensive 4-dimensional lookup tables, to convert images and colour values from one 'colour space' to another. This provides the maximum system flexibility.

The 'colour spaces' commonly used are RGB, HSL, CMYK and CIElab. Each of these 'colour spaces' has advantages in specific areas of reprographics and printing, but can also have limitations in other areas, especially image correction and processing.

**Note:** When the palette is recalled, boxes at the base of the palette display colour values in the current 'colour space'. These boxes can be used for both numeric colour entry and for checking colour values of specific points on the 'current image'; ie with the palette displayed, moving the pen into the image area and pressing down on a point will add that colour to the end of the pen. The numeric boxes in the palette will then display the appropriate values for that colour.

# Graphic Paintbox 2

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## Colour Space Formats

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### CMYK & CMY(K)

This 'colour space' reflects the actual ink dot percentages that would be placed on paper to reproduce the image.

CMYK reflects the use of normal printing inks with their imperfections and the use of black handling.

In addition, the CMYK values can include the effect of print control weightings such as black curve, Grey Colour Removal (GCR), Under Colour Removal (UCR) and dot gain, for example.

### RGB

This is a 'colour space' based on the primary colours of light (Red, Green and Blue), but having a restricted spectrum to that which can be detected by scanners or reproduced by optical/film methods.

**Note:** When RGB is displayed in the palette the fourth value 's', represents any *mask* value.

### HSL

This 'colour space' is defined in terms of Hue, Saturation and Luminance percentages. The HSL colour space is simple to use but can produce illegal (ie unprintable) colours.

**Note:** When HSL is displayed in the palette, the fourth value 's', represents any *mask* value.

### CIElab

A 'colour space' derived from the human perception of colour.

**Note:** When CIElab is displayed in the palette, the fourth value 's' represents the *mask* value.



## CONNECTIVITY

### Overview

The Graphic Paintbox 2 system is designed to be capable of accepting image information from a wide range of professional sources.



*See chp 2 - "CMYK Overview".*

Because it operates in conjunction with other colour input/output paths, it offers an enhancement of operation by allowing image data to be mixed from RGB and video applications with image data from the world of print.

The connection options with Graphic Paintbox 2 can be examined in terms of links internally to the Quantel family of products, and externally to other image sources.

### A QUANTEL CONNECTIVITY

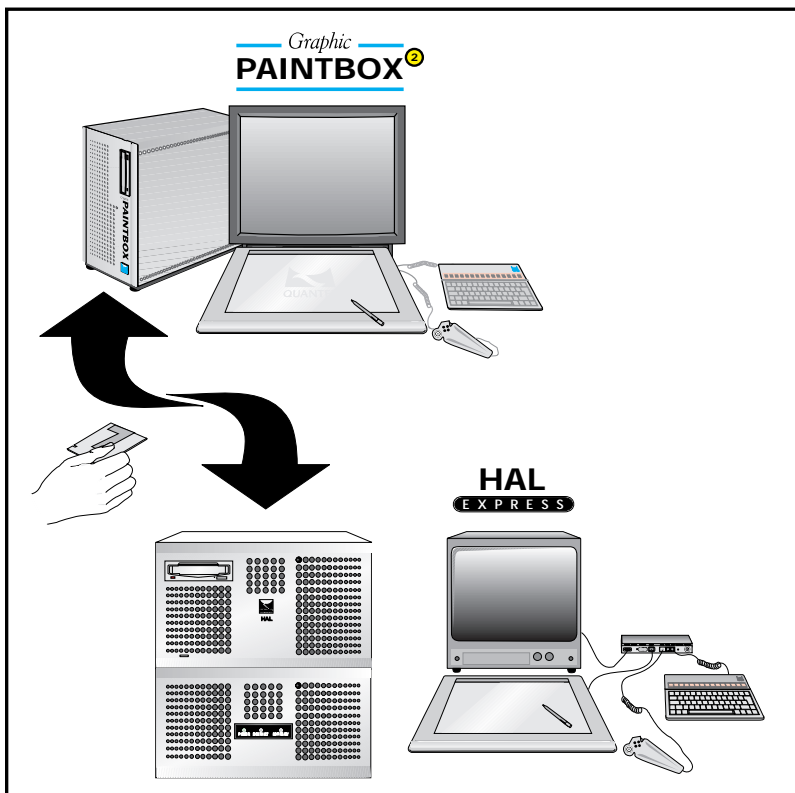
As part of the Quantel family of products, Graphic Paintbox 2 accepts all of the files created on any of the other Quantel products (ie Paintbox Express, Hal Express, Picturebox Express, Edit Box, Clipbox, Newsbox, Picturernet, Henry, Domino and Classic Graphic Paintbox for example). This means that images sourced via Quantel video or Quantel film products can be manipulated in Graphic Paintbox 2 and be prepared for print ready cmyk output. As a result, images from a television commercial for example, may be included in a print campaign, without the need for the expense or time penalty of re-creating the images.

The process of exchanging images between Quantel products is very simply carried out by saving the required image to Magneto Optical disk from the source system, and then inserting the same, unchanged, Magneto Optical disk into the Graphic Paintbox 2 where the image can be immediately accessed.

As well as accepting images into the Graphic Paintbox 2, the same method of transfer via Magneto Optical disks means that images from the Graphic Paintbox 2 can be transferred back out to any of the other Quantel products and mediums.

# Graphic Paintbox 2

This concept of simple connectivity between products is represented in the diagram below, using in this example the Quantel Hal Express as the second image source / destination:



**Note:** The Quantel video sample book is available on request, showing original video images and studio idents taken from their original size and expanded up to A4 and A3 sizes.

## B THIRD PARTY CONNECTIVITY

Graphic Paintbox 2 has been designed for fast and simple integration into all types of environment. In a busy network for example, where images may be supplied from digital cameras, high end scanners, removable media, as well as files created on other platforms, Graphic Paintbox supports third party image transfer over TCP/IP with FTP (File Transfer Protocol), using a Macintosh as the network bridge.

TCP/IP is an industry standard communication protocol developed for UNIX based systems. It is now commonly available on Macintosh and PC platforms and uses 100Base - TX ethernet (Fast Ethernet).

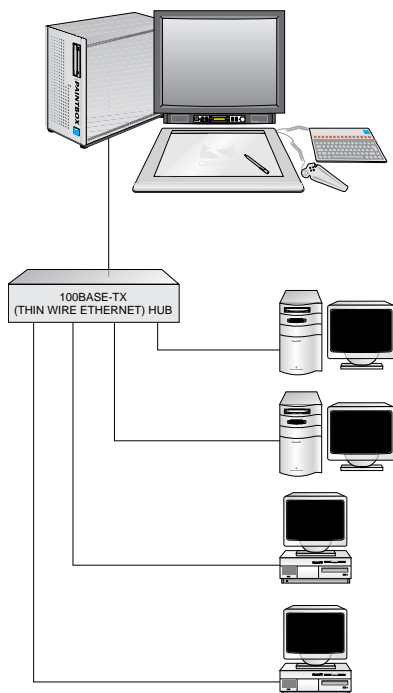
**Note:** TCP/IP software and a suitable Macintosh (equipped with a 100Base TX ethernet card or 10Mbit card and a converter) must be supplied by the user. Quantel supply a software package as standard to use with the user's Macintosh to connect with Graphic Paintbox 2.

When running the Graphic Paintbox 2 in conjunction with a third party network, files can be detected for open distribution on that network by saving the file down to the 4 Gbyte main disk (expandable to 16 Gbytes), in a format that the network can see as either RGB or CMYK, while keeping files which may be in the process of development from being transferred (ie by saving them as GPB2 files).

# Graphic Paintbox 2

Quantel provides license free software to allow any number of Macintosh systems on your network, to communicate directly with the Graphic Paintbox 2 disks, although all must be suitably equipped with an appropriate ethernet card (not supplied by Quantel).

Up to four users can access the files on Graphic Paintbox 2 at any one time, either transferring files to or from disk. An example of how a network system may be laid out is shown in the diagram opposite:



Connection between GPB2 and the network  
via 100BaseTX ethernet hub

The Macintosh application supplied with Graphic Paintbox 2 acts as a communication channel and file converter between the Macintosh and Graphic Paintbox 2. This application supports both RGB and CMYK TIFF file formats in both 'chunky' and 'planar' formats, and RGB and CMYK Scitex Handshake files. On output, the Macintosh provides the same type of files.

**Note:** The Graphic Paintbox 2's 'CMYK' option should be purchased and installed to use the CMYK file format.

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## Requirements For Third Party Connection

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The following information is supplied for reference when using Third Party systems with Graphic Paintbox 2.

Additional information on Graphic Paintbox 2 and Macintosh links can also be found in the Menu Reference, Appendix A and B, and the Installation Manual.

### A 100 BASE TX SINGLE USERS

A single Macintosh attached to the Graphic Paintbox 2 will require a 100 Base T Ethernet card and should run all cards which conform to the Macintosh operating system.

The Macintosh to be used should be running system software 7. 5. 3 with 8 Mbytes of RAM and with Open Transport software 1.1 or above.

### B NETWORK USER

Where multiple Macintosh connections are to be used, a 'hub' will be required to connect into the Graphic Paintbox 2.

Quantel will supply software for each of the Macintosh systems attached to the ethernet so that they can independently select the disk(s) on the Graphic Paintbox 2.

If a number of Macintosh systems are using a 100 Base TX network, then each must have a 100 Base TX card.

If the Macintosh systems are used on a 10 Base T network, the hub to which these are attached will have to be a 10/100 Mbyte converter type to connect into Graphic Paintbox 2.

**Note:** Graphic Paintbox 2 is supplied with two types of 100 Base TX Ethernet Cables: - a 'straight' cable (used to connect the Graphic Paintbox to a Hub, Router or Switcher) and a 'crossover'/'twist' cable, used to connect the Graphic Paintbox 2 directly to a Macintosh without using a Hub (this will only allow the single Macintosh to access Graphic Paintbox 2,s images). Both types of cable are made to CAT 5 specifications.

# ***Graphic Paintbox 2***

## COPY

### Overview

*Copy* allows image detail to be copied from one part of the 'current image' to another.

As a retouching tool this can be used for example, when a flaw such as a hair or scratch exists on a scanned image (or any other unwanted artefact), and needs to be removed to render the image as though the artefact were never there. By copying image detail from a 'clean' section of image, the artefact can be wiped over and therefore removed. Alternatively, *copy* can be used for any number of creative effects.

### A USING THE COPY BRUSH

The *copy* function is found within the *Painting* menu. When *copy* is selected, pressing down on the image defines a point where you wish to copy image detail from. By keeping the pen in proximity to the Tablet and dragging away from this first point, a yellow box area will appear. This box should be dragged out to the section of image where you wish the duplicated detail to appear.

A second pen press defines the extent of the box, the opposite corners of which show where the *copy* will operate 'from' and 'to' (ie the original pen press and the second pen press).

While still keeping the pen in proximity, the pen can then be used to paint in image detail. *Copy* is a permanent process, so wherever the pen is applied detail is added to the current image.

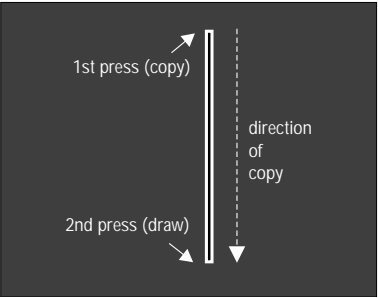
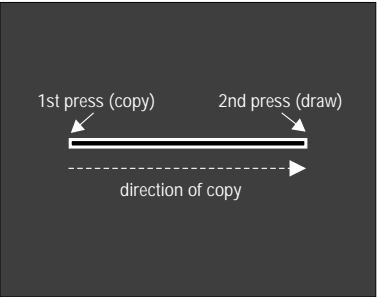
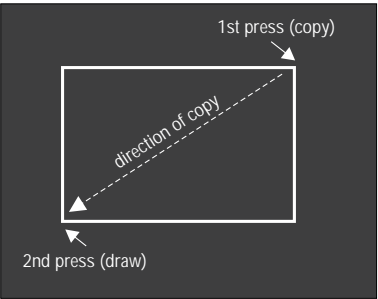
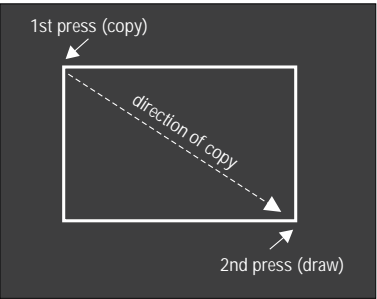
By raising the pen just off the Tablet surface but not out of proximity (ie so that the rectangle does not disappear off screen), the *copy* rectangle can be repositioned around the screen to copy different sections of image.

By raising the pen out of proximity to the Tablet the yellow *copy* rectangle will disappear, but any copying that was performed up to that point will still be applied to the current image.

The *mask* facility can be used to protect areas before using the *copy* brush. A soft edged *mask* can be used to allow the gradual introduction of copied image detail when the image contains graduated detail.

# Graphic Paintbox 2

## B SUMMARY OF COPY OPERATION



## C EXAMPLE



1. The original image.

Select *Painting - copy* and a suitable brush size (a smaller brush size is recommended for detailed work). Move the pen into the image area and press down to define one corner of a rectangle. The diagonally opposite corner of this rectangle defines where detail is copied 'from' & 'to'. Keep the pen in proximity to the Tablet and drag the rectangle out to where the image detail is to reappear. Press down a second time and, while still keeping the pen in proximity, paint in duplicated detail.



2. In this example, a section at the front of the castle has been copied and a third tower added by duplicating an existing one.

Image detail is copied from this point (ie the first pen press).

Image detail reappears at this point of the *copy* rectangle (ie the second pen press).



## CURRENT ITEM

### Overview

In order for the system to process any item, it must first be selected. When an item is selected for processing, it becomes the 'current item'. For example, when loading an image into the system's working store from the *Library* with the *new bgnd* function (new background), that image will become the 'current image'.

Subsequent *Painting*, *Colour*, *Library* or *Pasteup* functions will be processed using this image, as the 'current image'.

### A TYPES OF CURRENT ITEM

**Current Black Plane** This is the black (K) information that is held for the 'current image', accessed with the *draw - black* functions.

*See Black.*

**Current Colour** This is the colour currently on the end of the pen.

*See Painting.*

**Current Cutout** This is the last image fetched (ie using the *fetch* as opposed to the *new bgnd* function) from the *Library*.

Where *cutout - many* is selected (ie where more than one image has been fetched from the *Library* to be used as a cutout), the 'current cutout' will be the number next to the *cutout* box.

Selecting a different cutout to the 'current cutout' will promote that item to the 'current cutout' (the 'current cutout' number will be amended appropriately).

**Note:** Multiple cutouts are only available when the large backstore option is installed.

*See Cutout.*

# Graphic Paintbox 2

Current Grid	<p>This is the grid defined by the <i>Setup - grid</i> menu.</p> <p>When a grid is loaded from the <i>Library</i>, that grid will become the 'current grid', over-writing the grid in the <i>Setup</i> menu.</p> <p><i>See Grids.</i></p>
Current Image	<p>The last image loaded as a new background (with the <i>new bgnd</i> function) from the <i>Library</i>.</p> <p><b>Note:</b> The 'current image' can also be exchanged with the 'current item' in the <i>swap</i> buffer.</p> <p>Cutouts are overlaid on top of the 'current image'.</p> <p><i>See Swap &amp; Cutouts.</i></p>
Current Mask	<p>This is the <i>mask</i> currently loaded and viewed when the <i>draw - mask</i> functions are enabled.</p> <p><i>See Masks.</i></p>
Current Numeric Box	<p>Where more than one green numeric box is offered in the menu, the 'current numeric box' is the one highlighted in pink.</p> <p>When a green box is highlighted any pen movement or values altered with the keypad/keyboard, will be applied to only this parameter box.</p>
Current Priority Number	<p>This is the priority number of the 'current cutout'.</p> <p>The 'generation' number of the 'current cutout' is indicated next to the <i>cutout</i> box in the menu.</p> <p>The respective <i>priority</i> number appears next to the <i>priority</i> box.</p> <p><i>See Cutouts.</i></p>

CUTOUTS

Overview

A 'cutout' is either an image recalled from the *Library* (ie an image held on one of the currently attached and accessible disks), or a *copy* of all or part of the 'current image', that can be independently manipulated (which includes cutout resizing, altering the transparency and moving in 3D space) before it is permanently applied to the 'current image' in the required aspect, to form a new composite image. More than one cutout can be manipulated during a particular 'job'.

cutout	2	stick	PIC NAME	draw	mask	use
full res	hid	style	x.pos 1.2	draw	black	+ -
del sav		+ mask	y.pos - 8.2			
many	1	100%	angle 0.0	wipe		
priority		rename	magn 100.0			
		x100	y100	use	grid	
		orig	home	find	flip	tumble
		crop	grid	shape	swap	cut

Cutout titles (either saved previously or automatically generated by the system) are displayed in the roller menu when cutouts are fetched from the Library or created on screen.

When a cutout title is selected from the roller bar with the pen, a miniature preview of the image will appear on the right-hand side of the menu bar for easy identification of the required cutout. When a new cutout is made from an image, the smallest unused number between 1 and 99 is allocated to the cutout. This number can be seen in the box next to the cutout function (when the cutout is selected as the current cutout).

When an image is loaded from the Library via 'new background', it is given the name 'main image' (which will appear in the roller menu if the image is subsequently used as a cutout). The first image loaded into the machine via *new bgnd* from power on is automatically allocated the cutout number 100. This number is not recycled if the main image is deleted as a cutout.

When working with multiple cutouts, the *priority* function is available, enabling each cutout to be assigned a different 'priority' to determine which cutout item will appear in front of any other cutout item.

# Graphic Paintbox 2

The system is capable of handling and manipulating many cutouts at any one time, although the actual number that the system will allow will depend on the size of the cutouts to be used.

The *cutout* menu functions are available in the *Painting* and *Library* menus, with those functions which relate to the *priority* of cutouts also available in the *Pasteup* menu.

## A CREATING CUTOUTS

There are two methods of generating cutouts. Either an image is recalled from the *Library* with the *fetch* function ('i' below), or all of an image or section of image selected as the cutout using *cut* ('ii' below).

When a cutout is produced (using either of the methods to be described below), that cutout is assigned a number.

The first cutout produced is assigned the number '1'. Subsequent cutouts will be assigned incremental values from this point.

For example, if three cutouts are produced they can be identified as cutouts '1', '2' and '3' with '1' referring to the first cutout generated and '3' to the last.

A cutouts number will always remain the same, even if other cutouts are deleted, whereas the many/priority value can be altered (*see "Multiple Cutouts" in this section*).

- i The *Library* menu contains two functions for recalling images, the *fetch* function and the *new bgnd* function (new background). The *new bgnd* function will load the selected image as the 'current item', always overwriting any existing image. This will **not** produce a cutout.

The *fetch* function will load the selected image as a 'floating' image; ie this image appears over the 'current image' and can be independently manipulated in any aspect before it is permanently applied. Each time an image is 'fetched' in this manner, the previous 'current cutout' will be overwritten.

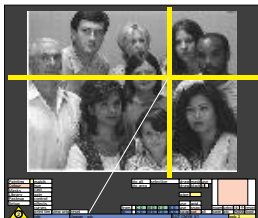
To generate multiple cutouts with the *fetch* function the *cutout* menu item is selected. This will recall further menu items, from which *many* is selected.

Once *many* is selected (ie highlighted in pink), each subsequent image recalled with the *fetch* function will become available as separate cutouts over the 'current image'.

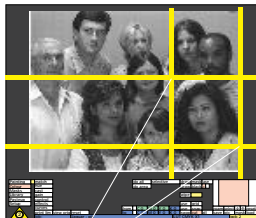
- ii The alternative to recalling images from the *Library* as cutout items, is to manually define a cutout from the 'current image'.

By selecting the *cut* menu function (bottom right of the menu), moving the pen into the image area will produce yellow cross wires at the tip of the pen (1 below). These cross wires can be used to define the first corner of a box that will be used to produce a cutout of an area of enclosed image.

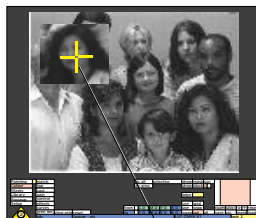
While keeping the pen in proximity, the cross wires are dragged out and then a second tap of the pen will define the extent of the image box and therefore the area to be *cut*; ie copied (2+3 below).



(1) After selecting *cut*, moving the pen into the image area and tapping down sets the first point of the box area to be duplicated (ie cut out).



(2) While keeping the pen in proximity, dragging the pen out allows the extent of the cut area to be defined; ie in this example, the head.  
Tapping down a second time will prompt the system to cut out the area within the defined box.



(3) Once a cutout is generated, the pen can then be used to drag the cutout around the screen.

This cutout could be used for example, in a *restore* operation (see "Restore").

Selecting *cut* will also recall the *all* box. The *cut - all* functions will make a duplicate of all of the 'current image' which can then be accessed as a cutout, recalled via the *cutout* menu item.

The *cut* function always copies the image and its *mask*. If *mask* has been applied to part of the area of image that has been *cut*, a 'shaped' cutout will be generated.

## B MANIPULATING CUTOUTS

Once a cutout is loaded, its movement around the screen can be controlled by the pen. Pressing down on a cutout will 'pick' it up; ie its movement will follow the movement of the pen around screen, as though it were on the end of the pen, while the pen is kept pressed. When the pen is lifted, the cutout will stay where it was last positioned.

With the *cutout* menu selected and *xpos* or *ypos* highlighted, cutout movement is constrained to the horizontal or vertical axis respectively.

# Graphic Paintbox 2

In the *Pasteup - 3D* menu, the *pos*, *spin* and *size* functions enable the 'current cutout' to be positioned, spun and resized, anywhere within the imaginary three dimensional space of the monitor screen.

A cutout is held in the system as a flat 2D tile, then manipulated in 3D space before being projected back onto the 2D monitor screen. The cutout can be manipulated in the x, y and z axis (using the three green boxes, reading left to right across the screen).

When a green numeric box is selected in the *cutout* menu to alter a cutout parameter (for example the transparency of the 'current cutout' or its magnification), a new parameter value can either be entered from the on-screen keypad, from the external keyboard (pressing <Return> to enter the value) or by using the pen to select a value, as follows:

- i Moving the pen up and to the right over the screen will increase the value in the selected numeric box (ie the 'current numeric box', highlighted in pink).
- ii Moving the pen down and to the left over the screen will decrease the value in the selected numeric box (ie the 'current numeric box', highlighted in pink).
- iii Pen pressure will control the range of movement; ie light pressure will give a small amount of movement and heavy pen pressure will produce large movement.

## C SAVING CUTOUTS

When a cutout is created a file is generated on the hard disk to hold the cutout if it is saved. This file also holds the cutout's original position. If the cutout is loaded from the Library, an empty file is generated into which the cutout can be saved (if it is modified). So, if several copies of an image are loaded as cutouts from the Library, each copy can be modified and saved independently of each other.

Active cutouts can be saved into the Library via the *cutout* menu. Selecting *save* and then either tapping on the cutout number, or on the cutout itself on the screen (or the cutout list box) will save the required image. Saving using the cutout list box will result in the saved cutout name being displayed in the list box once the pen is released.

If the software has been restarted without the machine being turned off, cutouts will not have to be reloaded from disks as they will be identified in the backstore. If however the machine has been switched off, cutouts that were originally loaded from the Library or were saved will be read from the disks. The roller menu will delete cutouts not saved.

It is recommended that before switching off the machine, all unwanted cutouts are deleted from the cutout menu, in order not to slow down the restarting process when the machine is switched back on again.

To save all cutouts on the screen, select *sav - all*.

Any masks attached to a cutout will automatically be saved along with the image.

**Note:** Under this function the job name will be left blank.

## D DELETING CUTOUTS

With the *cutout* menu selected, selecting *delete* will enable an individual cutout to be removed or by selecting *delete - all*, all 'current cutouts' will be removed.

**Note:** Deleting all the cutouts will temporarily lock the screen and will prompt the system to display the red message box "none". This indicates that the *cutout* menu functions (or the *Pasteup - 3D* functions if currently in the *Pasteup* menu) cannot be applied until a new cutout is recalled or manually generated. The red "none" box can be removed by pressing down hard with the pen.

To remove individual cutouts, the *cutout - delete* box is first highlighted. By then tapping on the green numeric box next to *cutout*, the 'current cutout' will be removed; ie the cutout whose 'generation' number is indicated.

Cutouts other than the 'current cutout' can be deleted individually by highlighting the *cutout - delete* box and then pressing the pen on the cutout to be deleted.

Where multiple cutouts are in use, this action will prompt the system to renumber the remaining cutouts *many* and *priority* numbers (see "*Multiple Cutouts*").

**Note:** If attempting to load multiple cutouts **without** selecting *many*, each new cutout will simply overwrite and therefore delete the previous 'current cutout'; ie there will only ever be one cutout available when *many* **is not** selected.

## E MULTIPLE CUTOUTS

It is possible to load or create multiple cutouts for use during the same 'job', when the *many* function has been selected.

**Note:** If attempting to load multiple cutouts **without** selecting *many*, each new cutout will simply overwrite and therefore delete the previous 'current cutout'; ie there will only ever be one cutout available when *many* **is not** selected.

# Graphic Paintbox 2

The *many* function is a running total of the number of cutouts that are currently loaded and available for use with the 'current job'. This number **can not** be manually adjusted (indicated by the fact that the *many* value it appears in a 'blue' numeric box), but will be automatically updated each time a new cutout is added or deleted.

When the *many* function is selected the *priority* box will also be recalled. The *priority* number represents the cutouts 'priority' with respect to all other cutouts over the 'current image'; ie which cutout will be displayed in front of any other cutout.

The *priority* system operates with the largest *priority* number being shown in front of any other cutout.

*Priority* '1' would mean that a cutout **could not** pass in front of any other cutout, while a *priority* of '3' would mean that a cutout **could** pass in front of items '1' and '2', **but not** '4' and '5', for example.

The number of 'priorities' available is always the same as the total number of cutouts currently in use (ie the *many* number) and the initial *priority* number of any one cutout will be the number it was called in as (the first cutout will have priority '1', the second '2', and so on).

However, the *priority* of an individual cutout can be manually changed to suit the 'job' requirements, using the following process:

- i The cutout which is to change *priority* is first selected as the 'current cutout'; ie its 'generation' number is entered next to the *cutout* box or that cutout is selected with the pen.
- ii The green numeric *priority* box is selected (ie highlighted in pink).
- iii A new *priority* number is entered from the on-screen keypad or from the external keyboard.

This number cannot be greater than the total number of 'current cutouts'; ie the *many* number.

- iv The 'current cutout' will move to its new *priority* layer (displayed above those cutouts with lower numbers or below those with higher numbers).
- v All other *priority* numbers will be amended accordingly.

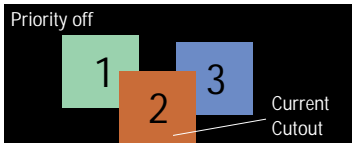
Taking the example of 3 current cutouts and the first cutout being moved from *priority* '1' up to '3', the previous *priority* '3' will become *priority* '2' and previous *priority* '2' will become *priority* '1' (see box four in the following diagram).



# CUTOUTS

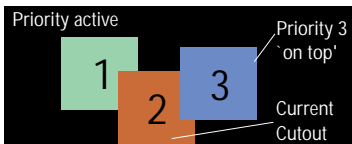


Three cutouts are produced (labelled 1, 2 & 3).

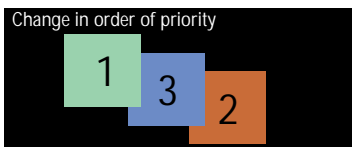


If the *priority* function is not active, which ever cutout is currently selected will be the cutout 'on-top'; ie it will displayed over any other cutouts.

In this example cutout 2 is the 'current cutout'.



When *priority* is selected the cutout with the highest *priority* is always shown on top even if it is not the current cutout. In this example cutout 3 is on top even though cutout 2 is the current cutout. Cutout 2 only has *priority* over cutout 1.



Transferring cutout 1 to *priority* 3 will mean that cutout 1 is always the top cutout in this example. The *priority* of cutouts 2 & 3 will be automatically adjusted; ie Cutout 3 is now only *priority* 2 and cutout 2 is at the lowest *priority* of 1.

When a cutout is permanently applied with the *stick* function, a copy of the cutout is stuck down in that position, leaving the original cutout free for further manipulation.

**Note:** When using multiple cutouts with the expanded Graphic Paintbox 2 system, the maximum size of all the cutouts used & the size of the current image must not exceed 80 million pixels.

## F HIDING CUTOUTS

This function enables layers to be stacked and hidden from view. If *del - all* is selected, all hidden layers will be deleted. This function can also be used as a quick method of comparing the cutout and the main image.

A - E

# Graphic Paintbox 2

## G GRIP CONTROL FOR MULTIPLE CUTOUTS

When working with cutouts in the *Library* or *Pasteup* menus, button 3 on the Grip, can be used to help in selecting an individual cutout for processing from amongst a group of cutouts.

With *cutout - many* selected (to allow multiple cutouts to be handled), the green numeric box to the right of the *cutout* menu box will detail the number of the currently selected cutout. The only cutout that can be manipulated or processed at any one time is the cutout indicated by this number; the 'current cutout'.

There are two methods of changing the current cutout:

- i Select the green numeric box to the right of cutout in the menu and enter the number of another cutout that you wish to use as the current cutout.
- ii The Grip can be used in combination with the pen to manually select a cutout for use as the current cutout.

With button 3 on the Grip held down, tapping down on a cutout with the pen will select that cutout as the current cutout (ie the cutout to which any changes to the cutout parameter settings will be applied).

The current cutout number (ie the green numeric box) will update as appropriate to the selected cutouts number (ie the number that the cutout was automatically assigned when it was created - its 'generation' number).

To change the current cutout again, simply keep button 3 held down and press on a different cutout.

It is not possible to move a cutout on screen with button 3 held down, only to select it. This is to avoid the potential problem of processing a cutout by accident.

## H SWAP

The *swap* function is used to alternate extremely quickly between the 'current image' and the 'current cutout'; ie the 'current cutout' becomes the 'current image' and the 'current image' becomes the 'current cutout'.

The 'current cutout' is determined by the 'generation' number next to the *cutout* box; ie the currently selected cutout out of all of those that exist for the current 'job'.



*See also: Current Item, Library, Pasteup, Swap, Temporary Storage Buffer.*

I RENAME

Cutouts can be retitled if desired, simply by selecting *rename*, typing in the new title and pressing *end* to confirm the change. If the image has previously been saved onto the hard disk and the cutout is then renamed, the new title will automatically update the old title in the Library.

J STYLE

Selected menu

Active title bar  
The desired effect title should be placed in this box in order for the effect to become active. This action will automatically transfer the chosen title into the style box.

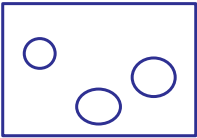
cutout	2	stick	cutout name
full res	hid	style	stick
del   sav		+ mask	outline
many	2	100%	surround
priority		rename	shadow
			emboss

Roller menu  
The effects available (*outline*, *surround*, *shadow*, *emboss* and *lightbox*) appear in a drop-down roller menu, which can be scrolled through with the pen.

When this menu is selected, it will show a second roller menu containing a number of effects, which can be seen only after sticking the cutout with the desired effect to an image. The effects available are as follows:

i Outline

This is a fixed-size keyline pasted around the edges of the cutout's mask. The colour of the cutout can be defined in the associated colour box. No image information will be stuck with this function. The keyline will go around the outside of the cutout, whatever shape that may be.



Outline reveals the background image through the current cutout, the border of the cutout displayed in the current pen colour

ii Surround

This will surround the cutout with a fixed-size border. A colour can be defined in the associated colour box.



Surround adds a border in the current pen colour around the edge of the cutout

# Graphic Paintbox 2

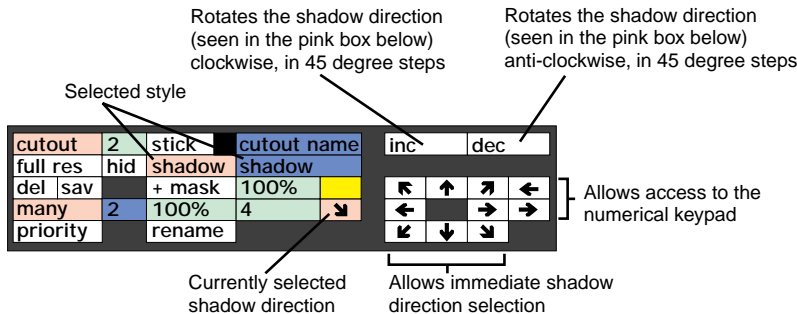
## iii Shadow

Allows a drop shadow of variable direction, colour and opacity to be applied to the cutout. This is shown in pixels and the default setting is 4.



*Shadow* adds a shadow in a selected colour. The shadow is a block of solid colour the same size and shape as the cutout

Upon selection of *shadow*, a directional arrow appears in a pink box. Tapping on this box opens the full directional sub-menu (see below).



These arrows determine which way the direction of the shadow will lie or which direction the light source (emboss) will fall. Arrows are available for 0-360 degrees in a choice of 45 degree steps. To select an arrow, either tap down with the pen on the required direction box, or use the *inc* and *dec* boxes to cycle through the available directions in a clockwise or anti-clockwise direction.

## iv Emboss

Enables the current cutout to be applied as if moulded in relief to the current image. The relief setting is defined by the selected arrow direction. For example, selecting the south-east facing arrow displays the cutout as if embossed in a bas-relief.

## v Lightbox

Combines two images based on the transparent light through two colours superimposed. This is equivalent to placing two transparencies on a light box over each other.

## vi **Addition**

Adds the light values of the combined images. This is useful for effects such as viewing an image through flames. Use *addition* to stick the image of flames (with a black background) onto the image: no stencil is required.

## vii **Grain**

This combines the cutout and background using the process that is used for adding grain to an image.

**Note:** It is worth remembering that the different style effects described can be attached to separate cutouts on the control plane, and the system will remember the style setups on each cutout.

# Graphic Paintbox 2

## **CHAPTER 3**

### **TOPICS F - J**

**F - J**

# ***Graphic Paintbox 2***



FONTS

Overview

This section looks at the availability and manipulation of text within the system.

The text facilities within the *Pasteup* menu provide a number of text functions. It will give access to any of the 1,085 vector fonts available on the system, which can be recalled from the Library. These fonts are not approximations or copies, but are the genuine typefaces, licensed for unlimited use on Graphic Paintbox.

A      LOADING A FONT

Fonts can be recalled from the *Library - find - text font* menu. Pressing *end* will recall all of the available typefaces. By selecting *Library - browse*, the fonts can be browsed 15 at a time with an example of characters in their individual styles. To load a font simply tap down on the required font while in the *new bgnd* or *fetch* mode. When selecting it is possible to fetch multiple fonts by tapping on each one required. These fonts will be held in the font buffer in *Pasteup*.

The text facility is not available in the *Pasteup* menu until at least one font has been fetched in.

B      TEXT COMPOSITION

Painting	3d	xpos	0.0	lose	typeface name															end
Colour	text	ypos	0.0	apply fo	1	2	3	4	5	6	7	8	9	0	-	=	.	del		
Masks	warp	size	2.2	map	cap	q	w	e	r	t	y	u	i	o	p	[	]	clear		
Library	page	kern	32.0	find	shift	a	s	d	f	g	h	j	k	l	;	'	#			
Pasteup	line	yinc	4.2	stick	ctrl	\	z	x	c	v	b	n	m	,	.	/	newline			
Setup	word	space	0.0	L C R	↑	↓	space													
	char	flip																		
	set map	tumble			↓		↓													

When *Pasteup - text* is selected the text menu is recalled. The text menu includes a soft keyboard, the top line of which will detail the last selected font from the Library. By pressing on the display line a scrolling list of all the font titles loaded will be displayed. While keeping the pen in proximity the roller bar can be scrolled through. The available fonts can also be viewed using the up and down arrows on the menu's soft keyboard.

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Having selected the required typeface, the text cursor (a horizontal yellow line) will appear at the left of the background image, near the top. This will indicate the current position for text entry. The text cursor can also be moved to a new location by tapping down and moving the pen to the required position. The colour of the text is determined by the current pen colour.

A second line of text can be created with the function *newline*. The position of the new line will depend on where the yellow text cursor has been positioned. This can either be at the end of a line of text or in the middle of the characters.

If a new font is required, choose the appropriate typeface from the roller menu.

## i **Page**

Allows any modifications to be applied to the entire page of text. If a true-type font has been selected and *page* highlighted, *tilt* and *shear* options are activated. *Tilt* will. *Shear* will.

## ii **Line**

Allows any modifications (*size* or *kern* for example) to be made to a selected line. If a true-type font is being used in combination with *line*, *tilt* and *shear* options are once again activated.

## iii **Word**

Allows any modifications to be made to individual words. If a true-type font is being used in combination with *word*, the *tilt* and *shear* options will again be activated, along with a *jump* option. *Jump* will move the word up or down, when the word of text is horizontal.

## iv **Char**

Allows modifications to be made to individual characters. When *char* is selected on a vector font, *flip*, *tumble* and *jump* are activated. *Flip* will flip the character into a backwards position, while *tumble* will turn the character upside down. *Jump* will move the character up or down, when the lines of text are horizontal. If *line* and *char* are not selected, then any modifications will effect all of the active text.

If *char* is selected using a true-type font the *flip* and *tumble* boxes will be replaced with *tilt* and *shear* options.

## v **Set map**

Allows the user to see what different characters can be used if *shift*, *control* and *cap* are utilised. It also allows characters, that are in the current font but not assigned to a key, to be used.

Selecting *set map* activates five character grids above the menu area. The top four (shown below) are the keyboard maps for the four modes of keyboard operation: un-shifted, shift, ctrl and shift & ctrl.

Default layout															
	1	2	3	4	5	6	7	8	9	0	-	=	'		
cap	q	w	e	r	t	y	u	i	o	p	[	]			
shift	a	s	d	f	g	h	j	k	l	;	'	#			
ctrl	\	z	x	c	v	b	n	m	,	.	/				

Layout with <i>ctrl</i> selected															
	i	*	c	⌘	,				X	'	°	—	±	·	
cap	æ	œ		®	+	¥	μ	i	ø	¶	"	"			
shift	a	ß	ö	f		,	-	-	†	"	'	ˆ			
ctrl		°		©	...	—	™	<<	>>	/					

Layout with <i>shift</i> selected															
	!	"	£	\$	%	^	&	*	(	)	+	=			
cap	Q	W	E	R	T	Y	U	I	O	P	{	}			
shift	A	S	D	F	G	H	J	K	L	:	@	~			
ctrl		Z	X	C	V	B	N	M			?				

Layout with <i>shift &amp; ctrl</i> selected															
	1	2	3	¼	¾	^	½	¾							
cap	Æ	Œ			±	fi	fi	Ø							
shift		§	Ð					L	"	°	"				
ctrl								Ð	<	>	¿				

Standard characters appear on screen in light grey, with accenting characters in white.

Below the four keyboard maps is a larger pad containing the complete character set showing the standard 227 characters.

Assigned characters are shown in dark grey, ‘accents’ in medium grey and unassigned keys in light grey.

vi *X/Y pos*

These boxes will move the text in either an x or y co-ordinate direction on the screen.

vii *Size*

This box will read in either pixels, inches or mm depending on what measurement is selected in the *Setup - job* menu. The maximum size is 9999 pixels (or the equivalent in inches or mm), as determined by the resolution.

viii *Kern*

Will increase the amount of space equally between the individual letters.

ix *Y inc*

This is a control to modify the amount of space between lines of text.

x *Space*

This will allow the operator to change the character spacing in between words.

xi *Lose*

Fonts can be deleted from the roller menu by making sure the correct font is active, and then selecting *lose*. While this will delete the font from the roller bar it will not delete it from the *Library*.

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## **xii Apply font**

This changes the font of the current line or character to that of the font currently selected.

## **xiii Map**

This locks the current keyboard map with the current font.

## **xiv Find**

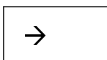
This function will locate the text if the text happens to be positioned off the background image. The start of the line will be positioned at the centre of the display.

## **xv Stick**

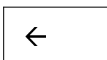
This function allows text to be stuck to the main image.

## **xvi L/C/R**

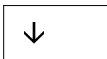
This function will either range the selected text left, right or centred. This movement will be based on the position of the first character before this function is activated.



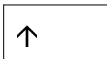
This will run the text forwards and horizontal.



This will run the text backwards and horizontal.



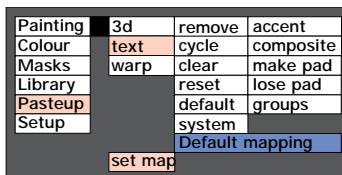
This will run the text vertically and ranged to the right.



This will run the text vertically and ranged to the left.

## **xvii End**

Allows the text to be automatically loaded into the cutout menu for manipulation as a cutout. The layer will be named to whatever the text has been titled (up to around 25 characters). The text will be seen as mask information, and for that reason no browse preview will be shown in the cut out browse area.



- Remove: When selected allows a character from one of the four selected maps to be deleted.
- Cycle: Allows consecutive characters to be placed in sequence into position on the keyboard maps. After *cycle* is highlighted, a character from the character pad can be selected (so that it highlights in blue) and this will then highlight any other appearance of that character on all four layouts (also in blue).
- Clear: Allows all assigned characters on all four keyboard maps to be cleared, providing a blank canvas with which to define a new soft keyboard layout.
- Reset: Allows keyboard maps to be reset to their last set up before any permanent changes were applied.
- Default: Overwrites the current character sets, so that whenever a soft keypad is recalled, in any system menu, the layout is as it was defined when *system* was selected.
- System: Applies the current character sets, so that when a soft keyboard is recalled the layout remains as it was when *system* was selected.
- Accent: Enables any character from the current font to be used as an *accent*; ie a characters kerning is removed so that it appears in the same position as the last character entered. Select *accent*, and then highlight the character desired for use as an accent. Deselect *set map* and enter the required text. Enter the character that requires an accent and then tap on the accent character.
- Composite: Selecting a character in the character set will highlight (in blue) any characters that have been combined (composed) to produce that character.

# Graphic Paintbox 2

- Make pad: Enables the character pad to be replaced with characters from the currently selected text font.
- Lose pad: Activating this box will replace the character pad with the system's default font and layout.
- Groups: This feature was developed for Arabic fonts, but can be applied to any.

It allows character forms to be grouped so that they are applied according to context. Four rows are supplied above the main keyboard layout, where characters can be added as required.

The first row specifies the controlling keystroke. It is also the character form used when the character stands alone. The second row is the form used when the character starts a word, the third that used when the character is in the centre of a word, and the fourth that for the end of a word.

- Default mapping: Shows that a standard map is currently in use.

## GRAPHICS

### Overview

This section details the system's five principle graphics functions; *curves*, *lines*, *rectangles*, *circles* and *ellipses*. These functions are used for precision drawing and positioning of geometric shapes and lines. The graphic functions are accessed from the *Painting* menu.

#### A CREATING GRAPHICS

A graphic shape can be created in any colour, brush type or pen size. With the menu still displayed and the required graphic type selected, moving the pen into the image area will allow a shape to be manually defined and edited before it is permanently applied with the *stick* function (the *curves* function also offers an automatic function, to enable the system to generate a *curve* based on user defined luminance values).

Graphics are initially outlined as a series of 'dots' or 'beads' (with each 'bead' appearing with the current brush size, type and colour). The first pen press will define the start position for the selected graphic. With the pen kept in proximity to the Tablet, the graphic can then be drawn out in any direction to define the extent of the shape. A second tap down with the pen will define the graphic.

**Note:** *Curves* operates in a slightly different way - see "*Curves*", in this section).

#### B MOVING & RESIZING GRAPHICS

Before a graphic is permanently applied it can be resized or moved as required (note that *curves* can not be moved in this manner).

##### i *Moving Graphics:*

- 1 To move a *rectangle*, *circle* or *ellipse*, press down in the centre of the temporary graphic and then drag the shape under pressure, to the new position.
- 2 To move a *line*, press anywhere on the line and drag under pressure to the new position.

# Graphic Paintbox 2

## ii **Resizing Graphics:**

- 1 To assist in resizing graphics, the system will automatically 'snap' to (ie jump towards) certain points on a selected graphic, when the pen is in proximity. Once on a 'snap' point the pen can drag the point, and therefore the shape, to a new size.
- 2 For lines, the system will 'snap' to the 'start' or 'end' points (ie the first and second pen taps respectively).
- 3 For rectangles, the system will 'snap' to the four corner points of the temporary graphic and will be 'attracted' towards each edge.
- 4 For circles, the system will be 'attracted' to the perimeter.
- 5 For ellipses, the system will 'snap' to four points at the extremity of the shape and will be 'attracted' towards the perimeter.

**Note:** *Curves* do not have automatic 'snap' points - see "*Curves*" in this chapter.

A graphic will be displayed as a solid outline if the pen is lifted out of proximity.

## C GRAPHIC FEATURES

Before a graphic is permanently applied, lifting the pen out of proximity and tapping down on a new point will allow a new graphic to be created. The previous graphic is removed (Except in the case of *curves*, where tapping down on a new point will enable a new *curve* to be generated).

After permanently applying a graphic, an identical copy is automatically produced and displayed over the top of the original.

The system's *statistics* functions (See *Fundamentals* - "*Statistics*") can be employed when a graphic needs to be drawn with precise dimensions.

The *stick* function does not have to be selected when creating graphics with the menu swiped off screen. When the extent of the graphic is defined, it will be automatically stuck down.

*Curves* can be saved in the *Library* as *curves* to be recalled as required, or transferred between systems via Magneto Optical disk for example.



Graphics can be constrained by the use of the *mask* facilities.

## Lines

To draw a line, select *lines* and press on the drawing area of the screen to set the 'start' point for the line.

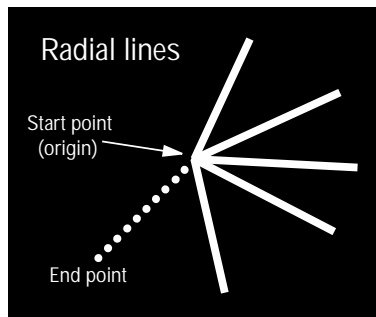
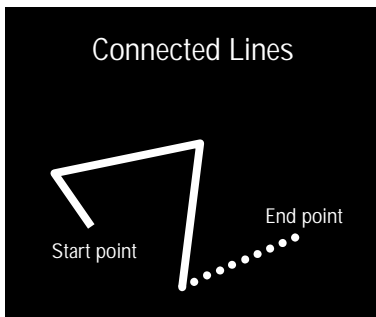
Keeping the pen in proximity, the string of 'beads' should be dragged in the direction the line is to take and to the length the line is to cover, before pressing down for a second time. This second pen press will define the 'end' point. A straight line will be drawn between the 'start' and 'end' points.

## A CONNECTED LINES

Lines can be drawn where the end point of the first line automatically becomes the starting point for a second. This is useful when irregular shapes are required. Select *connected* before defining the first starting point and lines will continue to be drawn between points specified until the pen is lifted out of proximity. *Connected* lines are automatically stuck down onto the image area.

## B RADIAL LINES

To draw lines emanating from a common origin, select the *radial* function and swipe off from the menu onto the painting area. Press once to define the origin in the desired position on the screen and then again to define the end of the line. Keeping the pen in proximity, further line ends can be established with subsequent pen taps, each originating from a common centre. All *radial* lines will be automatically stuck down as their end points are defined.



# Graphic Paintbox 2

## C CONSTRAINED LINES

Individual and connected lines can be constrained to the horizontal/vertical axis by selecting the *hv only* box before line drawing begins. This allows the construction of lines at right angles to one another.

## D PARALLEL LINES

Select *parallel* and define 'start' and 'end' points of the line as described above. All subsequent lines will be constrained parallel to the first, until *parallel* is de-selected.

---

## Curves

---

The *curves* menu allows 'Bezier curves' to be produced allowing complex shapes to be produced easily. This function is useful for tracing images manually (or automatically), to create line-work.

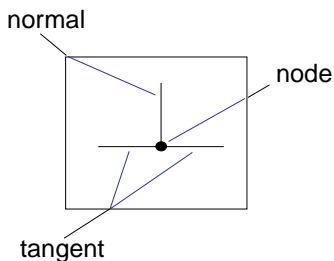
*Curves* are made up of a series of 'node' points which in turn join segments of curve.

Manually, after selecting the required pen colour, the brush size and type, moving the pen into the image area and tapping down on the image will produce a node point, represented by a cross. This point should be a point on the image that the *curve* is to 'bend' around.

While keeping the pen in proximity to the image, drawing the pen out from a node point will produce a *curve* segment. This segment can be dragged so that it marks around the area to be enclosed.

When it is necessary to change the direction in which a *curve* segment is to move, the pen is tapped down again to produce a new node point; ie a new start/stop position. A new section of *curve* can then be dragged out from this point. This process can continue until the *curve* is complete.

When editing a *curve* that has not been permanently applied, the *tangent* function enables node points (and therefore the adjoining curve segments) to be further modified, by manually adjusting the tangent/normal lines that are displayed over the node.



Touching a normal allows it to be moved, so affecting the line passing through the node in both amplitude and direction. Touching the end of a tangent (to select it), only affects the *curve* emanating from that side of the node.

## A POINTS (NODES) & MULTIPLE CURVES

When a *curve* is drawn, each node on that *curve* is numbered in order of generation and the *curve* as a whole will be assigned a number. These values are displayed in blue information *curves* and *points* boxes, in the *graphics* menu. These values are useful when multiple curves which may overlap for example, are displayed. Individual curves can be identified for editing and then individual nodes on a particular curve.

The blue *points* box details the number of the 'current node' (ie the node point the pen is or was, last nearest to) out of the total number of nodes generated for that image. New nodes can be added to an existing curve which has not been stuck down by selecting *insert* and then pressing on any point on that image. In practice however it is advisable to use as few nodes as possible, as complicated *curves* can be difficult to modify.

Currently selected curve out of total number of curves generated

curves	insert	stick	curve 1/2
lines	tangent	round	point 4/8
rectangles	filled	inv	straight
circles	open	lock	max 250
ellipses	delete	all	lum 4
	auto	adjust	bend 7
			smooth 10
pic			

Indicates the 'node point' the pen is/was last nearest too out of the total number of nodes for the selected curve

The 'curve number' (ie the number of the 'current curve' out of the total number of *curves* on screen), is displayed in the blue *curves* box. The 'current curve' is the *curve* that the pen is or was, last nearest to.

Moving the pen either onto a different curve from the 'current curve' or onto a different node point, will update the blue *curves* and *points* boxes respectively.

## ***Graphic Paintbox 2***

To remove *curves* that have not been permanently applied, selecting *delete* and then tapping on the blue *curves* box will remove the 'current curve' (as defined by the number in this box). The total number of curves and the 'current curve' will then be amended accordingly (ie the total number of *curves* will be decreased by one and the next curve will become the 'current curve').

To remove individual node points, select *delete* and then tap on the point to be removed. When a node is deleted, the two adjacent curve segments will join to form a single new segment.

A curve other than the current curve can be deleted by turning on the *delete* box and then tapping on the curve to be deleted between node points.

## B OUTLINING AN OBJECT

1. Select *curves* and press down on the points around the car where the curve has to bend. This process is similar to stretching a curve like a 'rubber band' around the outline of the car.



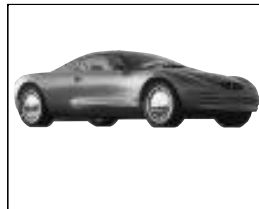
2. The *curve* can now be modified by selecting the tangent or normal lines around a node. Extra nodes can be added where necessary by selecting *insert* and then pressing on the desired part of the curve.



3. By selecting *filled* the curve becomes a filled shape. This can then be used as a mask to mask our either the car, or the background (see *Fundamentals Chp 4 - Mask*).



4. The *curve* retains its parameters until it is edited or another curve created.



# Graphic Paintbox 2

## C AUTOMATIC CURVE GENERATION

The *auto* menu option, available in the *Paintings - curve* menu, can be used to trigger the system to automatically generate a curve within or around an image.

Four criteria are used to define the contours of an automatic curve; *max*, *lum*, *bend* and *smooth*. A two stage process is employed to apply these criteria:

### Stage 1

The user defines a start point on the image with the pen and Tablet. This start point defines a luminance value or, if the pen is first dragged across an area of image, a luminance range will be taken.

The system will then proceed to look for other luminance values within the defined luminance band. The outline of a curve is generated as luminance values are searched for, tracing a path back to the original start position.

On the screen, this outline process is seen by the yellow cross which marks the position of the pen, moving rapidly around the image, but no actual line is drawn.

An automatic curve is always generated from the right of its start position (ie the last pen position on screen), so it is advisable to move away from the right-hand border of any image when finding a luminance value, to avoid the border becoming part of the curve (unless that is the desired result).

When the yellow cross marking the position of the pen, returns to its start position, stage one is complete.

## Stage 2

Stage 2 begins with the system making an automatic calculation, based on the outline it has just traced, to define the curve nodes and hence the exact path of the *curve* to be drawn. This calculation is made by applying the current *bend* and *smooth* parameters to the outline. These parameter values are default settings, unless the *adjust* function was previously used to recall and enter new values in these boxes (*see “auto-adjust”, below*).

When a new *auto curve* is traced, the default values of *bend* and *smooth* are automatically adjusted to suit the length of the curve.

*Smooth*, as its name suggests, effectively smoothes the outline of the curve. It does this by averaging the curve across the number of pixels defined in the *smooth* box.

*Bend* is used to define at how sharp an angle on the curve, a node is to appear.

Once the node points have been calculated, a comparison check is made between the total number of nodes to be generated and the current limit to the number of nodes defined in the *max* (maximum) box (*see “auto-adjust”, below*). The *max* value is a default figure, unless the *adjust* function was previously used to recall and enter a new value in the *max* box.

If the maximum number has been exceeded the final part of the process, drawing the curve on screen, will not be completed. Instead the curve will be aborted, with the number of nodes that were calculated displayed in the *points* box (The *points* box will also turn red to indicate that it is aborted).

If an *auto curve* is aborted and is required to be re-drawn, the *auto adjust* function is used.

# Graphic Paintbox 2

**Auto - adjust** The *auto - adjust* function is used when it is necessary to re-calculate an existing *auto* generated curve, from the second stage process; ie from the original starting point and therefore the original luminance value. The *max*, *bend* and *smooth* parameters are displayed when adjust is selected and can be altered to improve or adjust the curve.

**Note:** The *lum* box is displayed when *adjust* is selected. Altering this value will generate a new curve and will not alter an existing *auto* curve.

If a curve is aborted (*as described in “stage 2”, previously*) because too many *points* are generated (ie a number greater than the *max* number), the *adjust* function recalls the *max* box and therefore enables the user to increase the number of node points allowed by increasing the *max* number.

The previously aborted curve will then be re-drawn, as long as the *max* number has been sufficiently increased to accommodate all of the node points to be generated.

An alternative to altering the *max* figure, is to increase or decrease the *bend* or *smooth* parameters. Altering these values will also have a corresponding effect on the number of node points generated.

When a new number is entered in any of the four adjust boxes (ie *max*, *bend*, *lum* or *smooth*), alterations are applied immediately and the curve re-drawn, which in the case of *lum*, means a new curve drawn from the original start point on screen.



## D CLOCKWISE - ANTI-CLOCKWISE CURVES

When curves are drawn, the direction in which a curve is dragged when it is created (either clockwise or anti-clockwise), determines the way in which different curves will interact.

By altering the direction in which a curve is generated 'doughnut' type effects can be created; ie a filled curve can be produced with a hole inside.

Curves are either drawn in a clockwise or anti-clockwise direction. When two *filled* curves are drawn in the same direction and are lying over each other, the filled content will join so that the boundary between the two curves is indistinguishable.

The *curve - inv* function ('invert') can be used to change the clockwise/anti-clockwise direction of a selected curve.

The *inv* box is highlighted and then a curve selected with the pen. At any point where the inverted curve crosses over a curve of the opposite direction, the 'fill' will be removed, producing a hole.

---

## Rectangles

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To draw a rectangle, after selecting the *rectangle* box, press down on the drawing area of the screen to set the 'start' point for the shape to be constructed.

Keeping the pen in proximity, drawing the pen out will display the sides of the rectangle to be produced, as lines of connected 'beads'.

While the pen is in proximity, this box can be drawn out in any direction and to any size. Tapping the pen down a second time defines the diagonally opposite corner of the *rectangle* to be created.

If *solid* has been selected before the rectangle is produced, a 'solid' block of colour is immediately seen instead of the 'beaded' lines. This solid block can be drawn out in any direction.

**Note:** The *rectangle - filled* facility enables boxes to be drawn with the soft edge of the currently selected colour or stencil brush.

## A GRADUATED RECTANGLES

The two menu boxes containing vertical and horizontal arrows allow the graduation of a colour or stencil both vertically and horizontally in a rectangle. The level of graduation is defined by the luminance value of the colour deposited in the box next to the arrow boxes and the colour currently on the end of the pen.

# Graphic Paintbox 2

To construct a rectangle shaded horizontally with a gradation from blue to green, for example:

- i Select the green colour pot from the palette (swipe down off screen to recall the palette and tap the pen quickly onto the green colour pot to pick up that colour).
- ii Swipe the back to the *Painting - graphics - rectangles* menu and press the pen down on the square to the right of the direction arrow boxes. This will deposit the green colour in this box, defining the colour to graduate to.
- iii Return to the palette (by swiping off screen) and select a blue colour pot with the pen.
- iv This colour is not deposited anywhere, but as the current pen colour, this is the colour the system will use to 'wipe' from (ie the *rectangle* will be filled by moving from blue into green).
- v Swipe back to the *Painting - graphics - rectangles* menu and select the left/right arrow box.
- vi By moving the pen into the image area, tap down once to define the first corner of the rectangle to be drawn. By keeping the pen within proximity to the image (ie within 4/5mm), drag out the rectangle shape to the required size and tap down a second time to complete the shape.

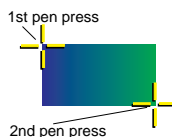
This rectangle will be automatically filled with blue to green (ie the colours we selected). These colours will fill the rectangle left to right or right to left, depending on which direction the rectangle is drawn out in.

Pressing the pen down in this box will deposit the current pen colour. The system will graduate 'to' this colour (see ii). The next colour selected will be the 'from' colour (see iii).

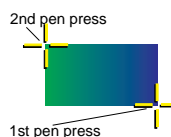
curves		stick		
lines	solid			
rectangles	↕↔	xy org	344	312
circles	square	xy len	1032	512
ellipses	centred			
	filled			
pic				

These boxes select the direction in which the gradation is to be performed across the screen; ie top to bottom / bottom to top **OR** left to right / right to left.

Graduating left to right.



Graduating right to left



Graduating top to bottom



Graduating bottom to top



- vii Selecting *stick* will permanently place the image in its current position.

The entire screen can be graduated if necessary, for use as a background for example, by completing the procedure described above, but by swiping the menu off screen before drawing the rectangle.

When using the *rectangles - solid* function, any type of brush can be selected from the *Painting* menu. However, by using the *airbrush* and varying the *airbrush* density percentage, the density of the *solid* fill can also be varied.

A 100% *airbrush* will for example, produce a solid, constant, full pressure fill, while an *airbrush* of 50% density will produce a fill with half the level of opacity; ie such a fill would allow image detail to be seen through the fill colour.

Where *solid* rectangles of different *airbrush* densities are overlaid, the different densities will mix.

**Note:** When *draw - mask* is selected, drawing a graduated rectangle will define a density graduation of the stencil proportional to the luminance of the two colours selected.

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## Circles

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With *circle* selected, moving the pen into the image area and tapping down on a point, will define the centre of that graphic. While the pen is kept in proximity, drawing the pen out in any direction will draw a circle out from that point. A second pen tap will mark the radius of the circle.

*Circles* can be drawn as *solid* (ie filled with the current pen colour) and *tangential* (ie a series of circles emanating from the same point).

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## Ellipses

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With *ellipse* selected, moving the pen into the image area and tapping down once will define the centre of the graphic to be created. While the pen is kept in proximity, drawing the pen out in any direction will draw the ellipse out from that point. A second pen tap will mark the extent of the ellipse.

*Ellipses* can be drawn as *solid* (ie filled with the current pen colour) and *tangential* (ie a series of ellipses emanating from the same point).

# ***Graphic Paintbox 2***

# GREEN MENU BOXES

## GREEN MENU BOXES

### Overview

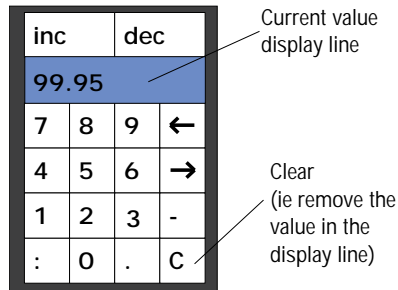
Green menu boxes allow numeric data to be entered to manually alter variables and system configuration parameters. Values can be entered and edited using the pen and numeric keypad (which appears in the menu when a green box is selected), or with the external keyboard.

When a numeric box is selected, the box colour will change to pink to indicate that it is active and that values can be altered.

### Entering Values

#### A USING THE NUMBER PAD

When a green parameter box is selected, the menu keypad appears on the right hand side of the menu, as shown. When using the number pad, the right facing arrow moves to the next green parameter box from the one currently selected and the left facing arrow to the previous box (where appropriate).



The *inc* and *dec* boxes increase or decrease the value of the selected numeric box by the value currently shown in the 'value display line' of the keypad.

Where no value is entered in the display, selecting *inc* or *dec* will increase or decrease the current value of the selected box by a default of '1'.

# Graphic Paintbox 2

When a value is selected on the keypad, it first appears in the blue 'value display line', before it is transferred. A value can be transferred to the numeric box in one of three ways:

- i By re-selecting the parameter box itself.
- ii By selecting another parameter box.
- iii By de-selecting the menu in which the parameter box resides.

**Note:** This third method will work unless there is no number entered in the keypad 'value display line', or if it was last used as an *inc* or *dec* value.

## B USING KEYBOARD ENTRY

To enter numeric values via the external keyboard, select the required value with the number keys and then transfer that value to the selected parameter box by pressing the <RETURN> key.

When entering values from the keyboard the following 'short-cut' keys are available. These can be used at any time to restore a specific parameter to a known working value for the specific application:

- i <B> selects the Biggest possible value for the current parameter.
- ii <S> selects the Smallest possible value for the current parameter.
- iii <D> selects the Default value for the current parameter.

## C USING PEN MOVEMENT

Numeric values can also be adjusted by dragging the pen in the image area (while the menu is still displayed). After opening/selecting a green numeric box, its value can be altered by dragging the pen up/down or left/right in the image area.

Up and right movements increase the value in the selected green box, while movements down and to the left decrease the value. Pen pressure will effect the scale of increase or decrease; ie the heavier the pen pressure the larger the effect.



*See also: The Pen*

GRIDS

Overview

The *grid* facility allows drawing functions to be controlled in a regular, mathematical manner. Grids are especially useful for page layout, when graphics items and line-work are to be very accurately positioned.

Grids are defined within the *Setup - grid* menu. When this menu is selected, it is further sub-divided into two types of grid to provide flexibility of operation and ease of use.

These sub-divisions are ‘page grid’ and ‘grid lines’.

Page Grid	This is a set of grid lines that can be used to define the dimensions of the output page to be used when montaging images. This grid, defined under the <i>page</i> menu, provides grid lines as margins, columns and gutters.
Grid Lines	Any number of grid lines can be defined on the screen to allow the accurate placement of images and graphic elements.

Both horizontal and vertical grid lines can be inserted anywhere on the screen and can be positioned numerically, or manually positioned with the pen:

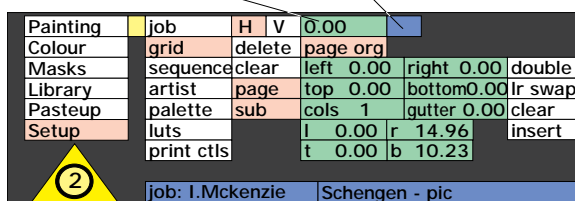
- i Move the pen, without pressure, out of the image area (up or down for a vertical grid line and left or right for a horizontal grid line), until the cursor disappears from the screen.  
The *H* or *V* box in the menu will highlight to indicate a horizontal or vertical direction, respectively.  
A yellow box will appear in the menu displaying the message “inserted if pressed” to indicate that a grid line can be created.
- ii Press the pen down and drag the cursor back into the image area (the yellow box turns orange and display’s the message “deleted if released”).  
A yellow grid line will be displayed on the screen. This is dragged to the required position with the pen.

# Graphic Paintbox 2

The currently selected grid line appears in yellow. Inserted grid lines will by default be coloured blue.

This colour pot is used to define the colour of the grid lines. Recall the palette, tap on a colour, swipe back to this menu and tap the pen down in this box to deposit the new colour.

Position of the current grid line



This colour can be changed by adding a new colour to the colour pot to the right of the numeric box at the top of the *grid* menu; ie the box detailing the numeric position of the current grid line.

By customising the grid line colour, the grid lines can be made to 'stand-out' from any background image.

To alter the position of an inserted grid line, place the pen over the required line until the line turns yellow. By maintaining pressure the line can then be dragged to a new position or out of the image area if it is to be removed.

To delete individual grid lines, select the *grid - delete* box and then tap down on individual lines that are to be removed. Alternatively, select a line with the pen (ie so that it is displayed in yellow), and then drag the line back out of the image area (left/right or top/bottom, as appropriate). When the line is released outside the image area it will be deleted (indicated by the orange menu box which appears and states "delete if released").

To remove all of the current grid set up, select *clear* and then the 'confirm' box which follows.

Once the grid has been defined it can be applied to a current image by selecting the *use - grid* functions, found on the far right of the menu area. These can be used to recall the grid set-up over an image and therefore control the accurate positioning of images.



See also: *Graphics, Library, Mask.*



# INFORMATION BOXES

## INFORMATION BOXES

### Description

Information boxes are a display feature for Library items, enabling pertinent directory information fields to be viewed for the current item.

The information boxes are enabled in the *display* menu, by selecting the *detail* box.

Positioning the pen and 'hovering' in proximity anywhere on *titles* line, *browse* picture, information card or filecard will display the information box for the item currently beneath the cursor. Moving the cursor (whilst maintaining proximity) will display a different information box according to the item in the vicinity of the cursor. Lifting the pen out of proximity or pressing the pen down will remove the information box from the screen.

The following fields will be displayed within the information box:

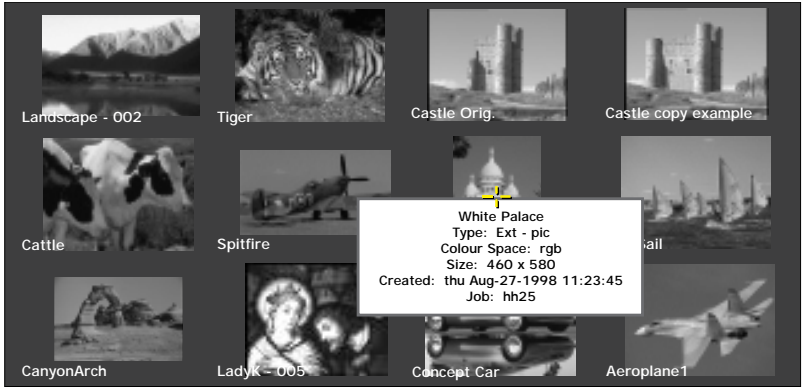
Name	The name of the item (titles longer than the display within the information box will be truncated from view).
Type	The file type of the item, ie pic, mask, brush etc.
Colour Space	The colour space used for the image.
Size	The dimensions of the image.
Created	Creation date and time.

Job and Client will also be included where the information is saved with the file.

# Graphic Paintbox 2

name	type	size	scaling	create
Wild One	pic	5000 x 4000 mm		thu Apr-23-1998 11:05:40
Wild Two	pic	5000 x 4000 mm		thu Apr-23-1998 11:20:19
Castle Drac	Ext - pic	330 x 350 mm		thu Apr-23-1998 10:43:01
Castle Orig.	pic	1000 x 700 mm		mon Oct-13-1997 16:51:23
Windsurfing	Ext - pic	400 x 350 mm		fri Nov-21-1997 09:35:53
Castle copy example	pic	330 x 350 mm		mon Oct-20-1997 10:10:21
Birds	pic	1000 x 700 mm		wed Aug-26-1998 12:31:17
Buffalo - 001	pic	400 x 350 mm		thu Jan-16-1997 15:56:48
Landscape	Ext - pic	3000 x 1000 mm		tue Mar-10-1998 10:34:09
Landscape - 002	Ext - pic	3000 x 1000 mm		fri Aug-28-1998 14:03:24
Concept Car	pic	300 x 200 mm		thu Sep-03-1998 11:47:51

**Note:** In the *Library*, information boxes can be utilized in any of the *titles*, *browse*, *info* or *card* display modes.



JOBS & PAGE SETUP

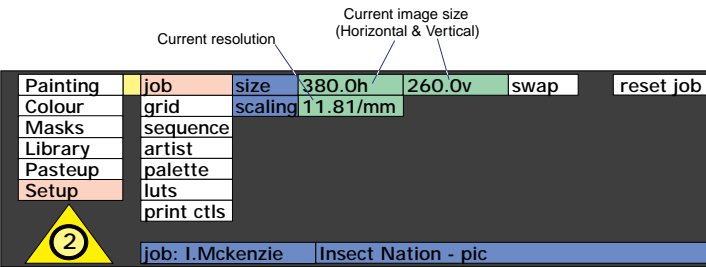
Overview

To recall an image into the system as the 'current image' the *Library - new bgnd* function (new background) is selected. Selecting this function will prompt the system to extract image size and resolution information from the appropriate image file and automatically load these parameters into its own *Setup - job* menu.

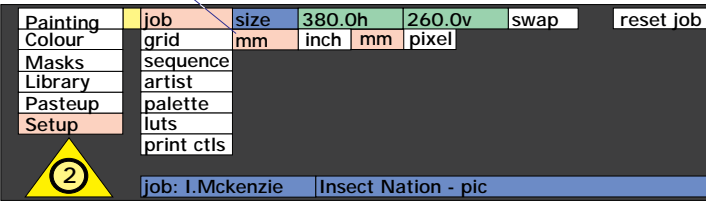
The *job* facility defines the system's working scale and allows images from different sources, or images scanned at different resolutions, to be processed and displayed at their correct relative size. This is essential when producing montages from different source material, to ensure that all the elements are at the correct scale.

Within the *Setup - job* menu, the working scale or 'page', is defined in terms of horizontal and vertical size together with a resolution value.

**Note:** It is important to remember that the required resolution should be set before the page dimensions, so that image size is not affected.



Press the *scaling* box to reveal the measurement options - the current choice is detailed (ie millimetres in this example)



# Graphic Paintbox 2

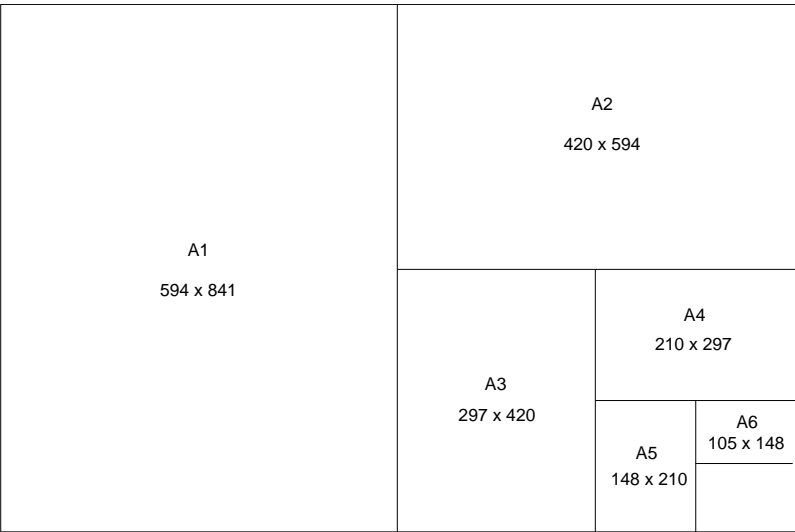
The units to be used for resolution and page size are selected by pressing the blue *scaling* box (ie *Setup - job - scaling*). This will recall three option boxes: *inch* (for inches), *mm* (for millimetres) and *pixels*. The currently highlighted box determines the current measurement format. Press on a different box (to highlight it in pink), to change the format. Once the correct format is selected, the *scaling* box can be re-selected to apply and hide these menu boxes.

The green box to the right of *scaling* can then be selected to enter the required resolution in the selected format, and then the new page size entered in the numeric *size* boxes.

The standard GPB 2 system can accommodate images up to 5" by 4", while the expanded system can accommodate 10" by 8" images at 1000lpi, or an equivalent of 80 million pixels.

**Note:** When using multiple cutouts in the expanded Graphic Paintbox 2 system, the total size of all cutouts together with the current image to be used in a composition, can not exceed 80 million pixels at 1000lpi.

Some typical page sizes are detailed in the following diagram (figures are shown in millimetres).



**Note:** The Graphic Paintbox 2 can handle an image larger than A1 size (ie 80 million pixels).

# JOBS & PAGE SETUP

## A PAGE SETUP EXAMPLE

In this example, we are required to set up an A4 page at 300dpi for a new job. The process of achieving this would be as follows:

- i Select the *Setup* main menu item.
- ii Select *job*.
- iii Select the blue *scaling* box (this may already state *inch*, *mm* or *pixel* from a previous job).
- iv From the recalled list of measurement formats, select *inch*.
- v De-select the *scaling* box (ie this will now state *inch*).
- vi In the green box to the right of *inch*, enter the resolution required (ie a figure of 300), using the numeric keypad. This box will now state “300/dpi” (ie 300 dots per inch).
- vii Because we wish to enter the page size in millimetres, we will now switch formats.

Since we have already entered our desired resolution, when we switch formats the resolution will be calculated automatically for millimetres (ie 11.81/mm).

To switch formats, re-select the *scaling/inch* box and select *mm* for millimetres. Now close this box; ie press on *mm* (scaling).

- viii Select the first green box to the right of *size* to enter the horizontal width of the page we wish to use (*h*). An A4 page is 210mm by 297mm. Select the second green box to the right of *size* and enter the vertical dimension (*v*).
- ix To process and display the new page size, select *reset job* and then the *confirm* box which will follow.

The A4 page at 300 dpi (11.81/mm) is now ready for use.

**Note:** If the working store is to be used as the ‘current page’ (ie once processing on the ‘current image’ is complete it will be output as the finished page), a ‘bleed’ would normally be entered. A typical ‘bleed’ value would be around 3mm for example. This can then be compensated for with the *Setup - grid* function, to restrict processing within the ‘bleed’ area.

# Graphic Paintbox 2

## B JOB NAMES

Images held within the system are usually identified by an individual 'name' assigned just to that picture. This name may be altered as required, or the image may be saved under a different name, after all processing has been completed for example.

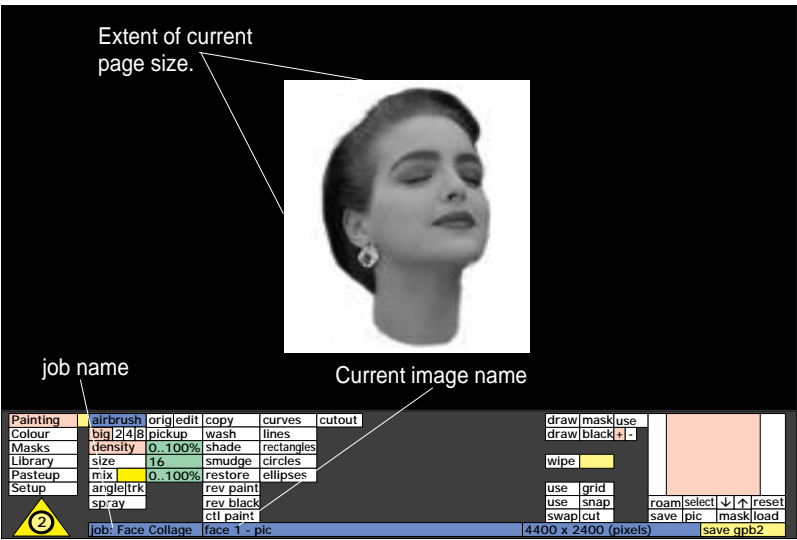
Additionally, images can be assigned a second title or 'job name'. A 'job name' provides a means of keeping track of several different images that require processing and are related or grouped together.

The 'job name' might for example be a customer name, where several individual images are all required for the same customer.

Alternatively the 'job name' could be the composition title, where a number of individual images require processing before they are composited together to form a single new image. All the individual images can be tracked and located even though they have separate titles, by searching for the 'job name', which will be the same for each of those images.

When images are assigned a 'job name', this information is recorded with the item in the *Library* and will appear in an individual items 'search card'.

When an image is recalled as the 'current image', any 'job name' assigned to that image will appear in the blue information boxes at the base of the menu screen.



**CHAPTER 4**  
**TOPICS K - O**

**K - O**

# ***Graphic Paintbox 2***



LIBRARY

Overview

The *Library* is a comprehensive storage and management system where items can be saved until required. Items may be assigned individual titles together with other pertinent information such as its file 'type' (ie 'picture' or 'mask' for example), to provide a file of relevant information and to assist in its retrieval.

The *Library* has 'intelligent' search facilities to find items using a combination of various search criteria.

Search Card

Whether saving items to disk or retrieving items for processing, the *Library* uses the same structure in the form of a 'search card' for detailing item information that the system will need to complete the save or retrieve function:

Name

Type

Disk

Job

Date

Number

Client

Description

Internal/External-pic

shared disks

all dates

Painting

Colour

Masks

Library

Pasteup

Setup

find

save

keep

lose

recall

name

job

client

date

col space

image

pic

mask

black

curve

image

1

2

3

4

5

6

7

8

9

0

.

=

del

cap

q

w

e

r

t

y

u

i

o

p

l

clear

shift

a

s

d

f

g

h

j

k

l

;

#

ctrl

\

z

x

c

v

b

n

m

,

/

new line

↑

↓

space

shared

included

←

→

draw

mask

use

draw

black

+

-

wipe

use

grid

use

snap

swap

cut

roam

select

save

pic

mask

load

↑

↓

reset

2

job:

Jaquar - pic

5.67x6.67in (300dpi)

save gpb2

K-O

# Graphic Paintbox 2

The 'search card' is divided up into a number of sections known as 'fields'. These fields can be accessed by pressing the pen over the relevant field name or by pressing the <TAB> key on the keyboard to cycle through the fields one by one. The field will highlight with a white box around it to indicate its selection.

Depending on whether an item is being saved or recalled (ie stored or found) the active fields in the 'search card' will change. These are as follows:

## A SAVE

NAME	Allows an item to be given an individual title, for recognition and retrieval purposes.
TYPE	Saves the relevant 'type' of file (ie a 'picture', 'mask' or 'curve' for example).
JOB	<p>Items may be assigned a <i>job</i> name as well as being given an individual name.</p> <p>A <i>job</i> name can be used where several images are to be grouped together for the same project, for example.</p> <p>When searching for the <i>job</i> name (<i>see 'find' below</i>), all images saved under that <i>job</i> title will be recalled.</p>
CLIENT	<p>Allows a tertiary title (ie in addition to the individual and <i>job</i> names) to be assigned to an item.</p> <p>A <i>client</i> name can be used where several <i>jobs</i> are to be grouped together for the same customer, for example.</p> <p>When searching for the <i>client</i> name (<i>see 'find' below</i>), all images saved under that <i>client</i> will be recalled.</p>
DESCRIPTION	Allows descriptive text to be stored with an item, though only for reference purposes. This may be information on the source of the item, or something to distinguish between similar items for example.

**B FIND**

NAME	Allows any <i>Library</i> entry to be found by any part of a title. If this field is left empty then all <i>Library</i> items will be recalled (dependent on any other search criteria that are set).
TYPE	Allows a search for one or more file types (ie 'picture', 'mask' or 'curve' for example).
DATE	Allows a search for entries recorded on a specific date, between two dates or recalls entries made on any date.
JOB	Any item saved as part of a specific <i>job</i> can be located with this search field.
CLIENT	Any item saved as part of a specific <i>client</i> grouping can be located with this search field.

---

**Multiple Title Entry & Search Buffers**


---

**A TITLE ENTRY**

When saving a job it may be useful to title items with the same name when producing successive versions of the same piece.

A quick way of entering and using a previous name for the current untitled image, is to recall the *Library - save - name* keyboard, and then press on the blue title line at the base of the menu. This will load whatever title is there into the keyboard display line. Selecting *end* will save the current image with that name.

Alternatively, items can be saved with the same name but can be distinguished as different versions of the same image by adding a numeric suffix. A suffix number can be added with the *inc* function.

Entering a title and then pressing the *inc* box will display a three digit number at the end of the text in the keyboard display line starting at -000. Each time the *inc* box is subsequently pressed this number will increment by 1. Selecting *end* will save that version of the image.

The next time the item is saved (assuming no other jobs have been saved in the mean time) the title will still be in the title bar line and will not need retyping. Selecting the *inc* box will however increment the title number by 1 and this new version may be saved by selection of *end*.

**Note:** The *dec* box reduces the suffix number by one.

# Graphic Paintbox 2

The screenshot shows the Graphic Paintbox 2 interface. At the top, there are labels for 'Search buffer arrows' pointing to the up and down arrow keys in the keyboard display, and 'Keyboard display line' pointing to the text input area. A note says 'Press end to save (or find) the item with the title entered in the keyboard display line' pointing to the 'end' button. The interface includes a menu bar with 'Painting', 'Colour', 'Masks', 'Library', 'Pasteup', and 'Setup'. Below the menu is a toolbar with buttons like 'find', 'name', 'save', 'job', 'pic', 'category', 'mask', 'black', 'keep', 'lose', 'col space', 'curve', 'image', 'shared', 'draw', 'mask', 'black', 'wipe', 'use', 'grid', 'snap', 'swap', 'cut'. The main display area shows a job titled 'job: I.Mckenzie' and a piece titled 'Owl Face - pic' with dimensions '5.67x6.67in (3)'. A yellow triangle with the number 2 is in the bottom left corner. A note at the bottom left says 'Press either of these boxes to enter the job or name into the keyboard display line (Note: If any text already resides in the display line, then these titles will be added onto the end of any existing text)' pointing to the 'job' and 'name' buttons. A note at the bottom center says 'Press inc to add a suffix number to the current title' pointing to the 'inc' button. A note at the bottom right says 'Use the arrow keys to scroll back or forwards through the text in the keyboard display line, where more text exists than can be seen in the line at any one time.' pointing to the left and right arrow keys.

To find these items only the title need be entered and all versions of the piece will be displayed enabling an item to be picked up from any stage through its creation.

## B SEARCH BUFFERS

Information entered into the *name* field can be stored in an individual buffer for that field, for future use. After entering the required text, selecting the 'up' (↑ arrow key in the soft keyboard stores the information in the search buffer (see the previous diagram for the location of the arrow keys in the soft keyboard display).

A second piece of information can be stored by selecting the 'down' (↓) arrow key.

To recall information held within either buffer for the selected field, re-select the 'up' or 'down' key as appropriate (ie ↑ or ↓).

Information stored within these buffers is not overwritten, but must be deleted before a new entry can be made. The current entry can be deleted with the soft keyboard *clear* function.

---

## Key-word Search

---

When searching for entries using the *name* field of the *Library* card, the system has a built-in facility to search for all entries which have similar title characteristics.

Text entered for a search is viewed as a set of 'key-characteristics' or 'key-words'; ie a series of characteristics which are to be searched for amongst the recorded titles in the *name* field, as selected.

The 'key-word' search facility operates as follows:

- i Typing in a single 'key-word', which may be the first few letters of a name or a single character and selecting *end* to process the search, will find all entries whose titles begin with those letters or a single character.
- ii For example, searching for 'And' would find *Library* entries with the titles 'Andrew' and 'Android', but not 'Sand'.
- iii Typing in two or more 'key-words' each separated by a space, will prompt the system to search for any entries which have both of those words appearing anywhere in their title.
- iv For example, searching for 'President Airport' would find a *Library* entry with the title 'President Arrives at Airport' but would not recall the title 'London's Third Airport' because both 'key-words' do not appear in that instance.
- v Typing two or more 'key-words' with each separated by an ampersand (&), will prompt a search for all *Library* entries in the selected field which have any of those words entered.
- vi For example, searching for 'President & Airport' would find the entry 'President Arrives at Airport' and would also recall the entries 'London's Third Airport' and 'President leaves London'.

With no 'key-word' entered for a search (ie no text entered), the system will recall all the items recorded in the selected field, regardless of their title, when *end* is selected to process the search (Note that the titles recalled will still be dependent on the selection of any other search field criteria; ie if a specific *date* has been selected for the search for example all titles for that specific date will be found but not any others saved on previous dates).

# Graphic Paintbox 2

## Search Displays & Item Selection

When a search is performed (ie the end function is selected in the menu soft-keyboard to process the search), any items discovered that fit the selected search criteria will initially be displayed as a list of titles. This is one of five methods of displaying items found in a search, as described below:

### A TITLES

This is the default display of items once a search has been performed. The display indicates how many titles have been found with the current search criteria and a list of the titles found, with field information to the right hand side of the screen as selected in the *display* sub-menu (*see section E, below, for full details*). This information may include file *type* and image *size*, for example.

At end of 8 on shared disks		
Ian - Fused	pic	330 x 350 mm
People	pic	600 x 750 mm
Castle Orig.	pic	200 x 390 mm
Castle copy example	pic	300 x 390 mm
Video import	pic	1000 x 1400 mm
Ian - Owl Face	pic	330 x 350 mm
Head1	pic	200 x 390 mm
Head2	pic	200 x 390 mm

Select an item or number of items, by pressing the pen on the required item's title line.

### B BROWSE

Items may be displayed pictorially to give an indication of the content of the items if the titles are not distinct enough. Up to fifteen browse miniatures may be displayed at any one time.




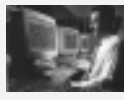


Selection of the items is made by pressing the pen down on the appropriate item(s). The item will be briefly ticked in acknowledgement of the action.



## C INFO

It may be advantageous to have displayed the browse miniature with additional textual information, for example, the title and date recorded of the items to enable simpler selection.

Info cards do just this and they can be displayed up to 6 at a time on the screen. Selection is made by pressing the pen down on either the relevant browse miniature or the associated library information area adjacent to it.

<b>Name</b> Ian - Fused <b>Type:</b> Ext - pic <b>Size:</b> 330 x 350 <b>Disk:</b> SYSTEM DISK <b>Date:</b> thur apr-18 -1996 01:30:18 <b>Job:</b> I.Mck		<b>Name</b> Castle copy example <b>Type:</b> Ext - pic <b>Size:</b> 300 x 390 <b>Disk:</b> SYSTEM DISK <b>Date:</b> thur apr-18 -1996 11:59:00 <b>Job:</b> I.MCK	
<b>Name</b> People <b>Type:</b> Ext - pic <b>Size:</b> 600 x 750 <b>Disk:</b> SYSTEM DISK <b>Date:</b> thur apr-18 -1996 11:59:00 <b>Job:</b> I.Mck		<b>Name</b> video import <b>Type:</b> Ext - pic <b>Size:</b> 1000 x 1400 <b>Disk:</b> SYSTEM DISK <b>Date:</b> thur apr-18 -1996 10:39:15 <b>Job:</b> I.Mck	
<b>Name</b> Castle orig. <b>Type:</b> Ext - pic <b>Size:</b> 200 x 390 <b>Disk:</b> SYSTEM DISK <b>Date:</b> thur apr-18 -1996 11:59:00 <b>Job:</b> I.Mck		<b>Name</b> Ian - Owl Face <b>Type:</b> Ext - pic <b>Size:</b> 330 x 350 <b>Disk:</b> SYSTEM DISK <b>Date:</b> thur apr-18 -1996 15:04:42 <b>Job:</b> I.Mck	

## D CARD

The filecard facility displays the item in the form of an on-screen index card, displaying all details entered onto the search card at the time of saving the item in addition to a browse miniature and any *description*.

Selection of an item is by pressing the pen anywhere on the filecard.

## E DISPLAY

This function allows the user to specify the textual information, other than title, to be displayed after a search has been activated. Selecting any of the *display* choices (*job*, *client*, *create*, *type*, *volume*, *size*, *Col Space*, *scaling*) individually, or in any combination, will immediately update the screen, placing the new information to the right of the item's name.

# Graphic Paintbox 2

If too much space is taken up by existing fields, an orange box will appear indicating “no room for field”. One or more information fields would then have to be deselected, or reduced in size (*see below*), to allow space for the new field.

Once in place, fields can be rearranged or resized to suit, using the pen in the display header area (at the top of the screen).

Two fields can be made to swap places by selecting one (highlighting it in black), then sliding the pen, without lifting the nib from the Tablet surface, across the header bar to another field header. While the pen is held over a field header, it will be highlighted in white. Lifting the pen from the tablet completes the action, causing the black and white highlighted fields to swap places.

The assigned width of a field can be adjusted using a vertical yellow line which appears to the left of field headers as the pen ‘hovers’ over them. Pressing down on this line allows the field width to be increased or decreased as required.

## F SORTING

Once a search has been performed, the items found can be sorted by any field visible on the titles display. If the required field is not currently on display, it can be added from the *display* menu (*see ‘Display’, above*).

Sorting is performed in the display area header bar. Pressing down on the field header will arrange that field, and consequently the items, in alphanumeric order (ie A to Z, or in increasing numerical value).

Selecting *reverse* in the menu will reverse the alphanumeric sorting applied or to be applied (ie Z to A, or in decreasing numeric value). Note that reverse will apply to all sorts performed while it is highlighted (ie pink).

*Clear* will remove the current sort mechanism being used, reverting back to the default “unsorted” display. The command will come into effect the next time the search display is altered (ie a *first*, *next* etc operation or a further search).

## G INFORMATION BOXES

Information boxes can be displayed in any of the *Library* search display modes. These boxes offer additional directory details not normally displayed within the *Library* structure and are switched on by selecting *detail* in the *display* menu.



*See ‘Information Boxes’.*



# LOADING NEW SOFTWARE

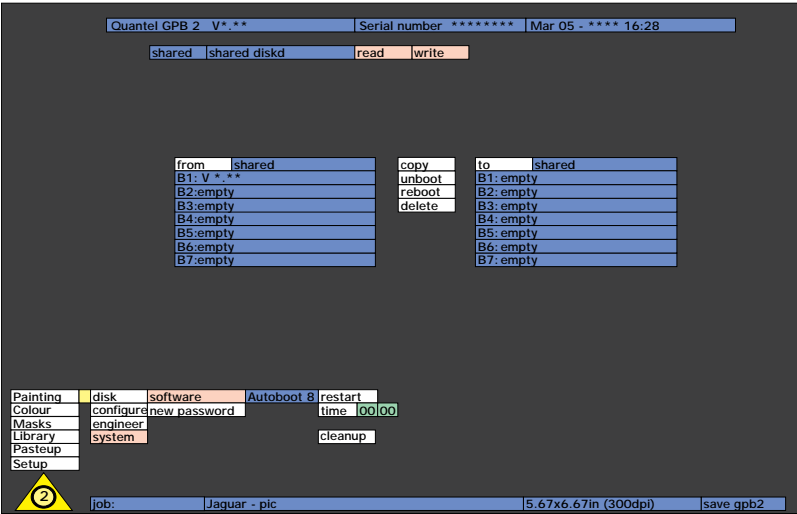
## LOADING NEW SOFTWARE

### Overview

As updates and improvements are made to the Graphic Paintbox 2 software, new versions will be issued which can usually be loaded (unless otherwise instructed), by the user direct from Magneto Optical disk. If software upgrades are purchased (the 'cmyk' option for example), these are also supplied on Magneto optical disk and can be installed by the user following the instructions detailed in this section.

**Note:** Should any problems occur during the software installation procedure, please contact your nearest Quantel customer support office for additional help and advice.

The software menu is accessed from the *Full Page - system* menu.



K-O

The *software* menu shows lists of boot files on two disks at a time. The lists are labelled *from* and *to* allowing software to be copied easily from one boot location on one disk to another, or to a different boot location on the same disk.

# Graphic Paintbox 2

## Software Installation

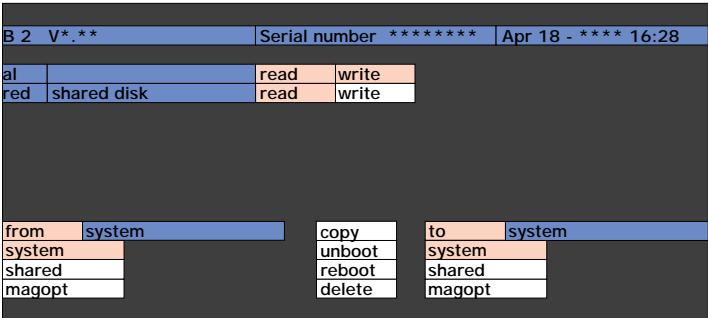
The installation procedure is divided into 2 sections:

- 1        In the first section the current software is copied from the system disk boot location 1 (ie the boot location that the system automatically uses to boot from on start-up or *reboot*), to an empty location using the *copy* function. This provides a back up of this software version. The copy that remains in boot location 1 is then deleted to allow the new software to be transferred there.
  
- 2        In the second section the new software is copied from Magneto Optical disk into boot location 1 on the system disk and then the system re-booted to activate this software, by switching the machine on and off.

**Note:** The system is also installed with *snetcomm* software which resides in boot location 7. With a software update, a new issue of this code will also be supplied and therefore the procedures detailed here in sections 1 and 2 for transferring the software in boot location 1, must also be repeated for the *snetcomm* software in boot location 7.

### A        SECTION 1 - TRANSFERRING THE OLD SOFTWARE

- i        Press the currently highlighted main menu item a second time (ie *Painting, Colour, Masks, Library, Pasteup* or *Setup*), to enter the *Full Page* menu and then select *system*.
- ii       Select *software* and then from the screen display which will appear, select the *from* box.
- iii      Under the *from* box a list of drive choices is displayed. Select *system* by tapping on that box with the pen. De-select *from*.



# LOADING NEW SOFTWARE

- iv Select the *to* box and again select the *system* drive from the list that appears. Once *system* has been highlighted, de-select the *to* box.
- v Under the *from* list, tap on boot location 1; ie the location that holds the old software version.
- vi Select *copy* and then tap on an *empty* location in the *to* boot list. To process the *copy* function select *confirm*.
- vii When the software has been copied it is safe to remove the old software from boot location 1. This is to produce an empty location for the new software to be transferred into.

To remove the old software, highlight the *delete* function and then tap on boot location 1 in either the *from* or *to* boot list. Select *confirm* to process the *delete* function.

The word “empty” will appear to indicate that boot location 1 is now free and ready to accept the new software (*see section 2 which follows*).

## B SECTION 2 - LOADING & BOOTING NEW SOFTWARE

- i Re-select the *from* box to recall the list of available drives and select *mag opt* (ie Magneto Optical).  
Once highlighted, de-select *from*.
- ii Ensure that the Magneto Optical disk holding the new software has been inserted into the drive.
- iii Highlight the *from* boot location holding the version name of the new software, by tapping on it with the pen.
- iv Highlight the *copy* function.
- v Highlight the *to* boot location that the new software version is to be copied into (ie boot location 1).

**Note:** The *to* list should still be connected to the *system* drive.

- vi To process the *copy* process, select the *confirm* box.
- vii Remove the Magneto Optical disk containing the new software from the drive.

**Note:** When attempting to boot new software the Magneto Optical disk should be removed from the drive as the system will attempt to boot from that location.

# Graphic Paintbox 2

- viii Use *reboot* to start the system running with the new software; ie select *reboot* and then tap on boot location 1.

It is not sufficient to initiate new software with the *restart* function as this will only prompt the system to restart the system with the original (ie 'old') software.

**Note:** To activate any optional features that have been purchased with the system, the correct passwords as supplied by Quantel, must be entered:

- 1 In the *Full Page - system* menu, select *new password*.
- 2 When *new password* is selected, the menu keyboard is displayed to allow the text of the password to be entered. The case and spacing between characters should be followed exactly as it is supplied.
- 3 After entering the password, select *end* and then restart the system.

## MASKS

### Overview

The system provides facilities to create an internal stencil, known as a *mask*. This can be used to cover and therefore 'mask-out' specific image areas before processing, to protect those areas.

A *mask* can be used for example, in the same way in which a stencil would be used in traditional painting and graphics work, to protect an area of image before it is airbrushed or over-painted. In addition, a *mask* can be created using the 'black plane' of the 'current image'; ie the 'K' element of a 'CMYK' image.



*See also "Black".*

The *mask* is a multi-level medium, producing effects from fully transparent to fully opaque, dependant on the density of the *mask* applied and the techniques used.

The mask functions are accessed from within the *Masks* main menu and their use is controlled by the *draw - mask - use* ('+' & '-') functions, which appear in all the principle menus.

# Graphic Paintbox 2

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## Manual Mask Generation

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One method of adding a *mask* to the 'current image' or of amending a *mask* that is already attached to that image, is to 'paint' the *mask* over the image by hand. This is carried out in the *Painting* menu:

- i The image to which *mask* is to be applied is recalled as the 'current image' (ie recalled with the *new bgnd* function).
- ii The *Painting* menu is entered and then *draw - mask* selected. Any *mask* that has been saved with the 'current image' will be recalled at this point.

Traditionally the *mask* is displayed in red, although this can be changed to any colour currently on the end of the pen, by tapping the pen down in the colour pot to the right of *wipe* (when *draw - mask* is selected). It can be useful to change the *mask* to an alternative colour, to distinguish it, where for example an image contains a large amount of red detail.

- iii To manually apply *mask* (ie to add *mask*) the '+' function must be highlighted in the menu.

If the '-' function is highlighted the pen can only be used to remove *mask*.

Either the pen can be used to select the '+' function if it is not already highlighted, or pressing the Hand Unit thumb to the left will also toggle to it, so that it is highlighted (pressing right selects '-').

- iv To manually add *mask* the menu is then swiped off screen and the pen can be used as in 'paint' mode; ie wherever the pen is in contact with the 'current image', *mask* will be added.

Again, as in 'paint' mode, the pen is pressure sensitive to enable all levels of *mask* density to be applied.

The *mask* is applied with the current brush type and in the current brush size.

**Note (1):** The *mask* can not be applied with big brushes.

**Note (2):** Within the Library menu, *mask* only information can be fetched into the draw *mask* layer. The *mask* that was present beforehand will be overwritten. This picture will not be wiped. If the new *mask* is a different size to the picture, the *mask*'s top-left corner will be aligned with the top-left corner of the picture.

When selecting *new bgnd* within the Library menu an option to bring in the 'mask only' is available.

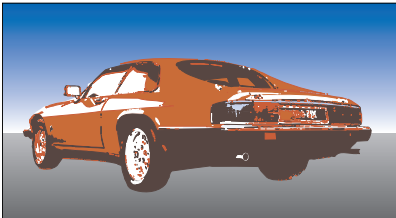
## Additional Mask Features

The following features are also available with *draw - mask* selected (note that if *mask - use* is selected, to apply the current *mask* set-up to the 'current image', then these features are not available):

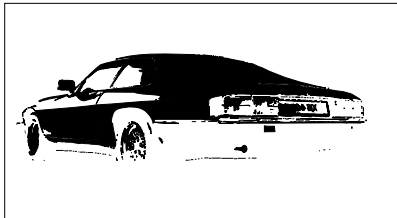
### i **H (High Contrast)**

The letter 'h', which is recalled to the right of the '+' and '-' minus functions when *draw - mask* is selected, can be used to view the 'current mask' as a high contrast black & white image (a 'hicon' for short).

When selected, the area where *mask* is currently applied is displayed on screen as an area of black, with the remainder of the image blanked out to white.



1) Current image before  
'h' (hicon) is selected



2) High contrast black & white image  
with the current mask displayed in  
black, for as long as 'h' is pressed or  
button 4 on the Hand Unit held down.

While the 'h' box is selected (ie while the pen is pressed down on the box), moving the pen across the Tablet while retaining contact between pen and Tablet, will enable the current image to be scrolled across the screen. This enables previously obscured areas of image to be viewed. Moving the pen out of contact will de-select this function.

This function can be used to check on the detail the 'current mask' encompasses, and so be used as a reference to help make any necessary alterations, where appropriate.

The 'hicon' function can also be recalled by selecting button 4 of the Hand Unit (except in the *Painting* menu). This will display the high contrast image for as long as the button is held down.



*See also the Masks - hicon section in this chapter.*

# Graphic Paintbox 2

## ii *Rev (reverse)*

The reverse function can be used to swap the 'current mask' area with the unmasked area; ie all those areas which are currently masked are removed of their *mask* content, and those areas which were previously unmasked will now contain *mask* detail.

This function would be used in a situation for example, where the area to be masked is very difficult to 'pin point' or paint to directly. A larger area of image could be selected to be masked and then the entire *mask* reversed to cover the 'real' area that is to be protected.

Subtle alterations can also be achieved by using *rev* in combination with the '+' and/or 'minus' boxes and the 'hicon' (h) function.

## iii *Wipe*

When using *wipe* with *mask*, the *mask* can be applied as a solid or graduated *wipe* across all of the 'current image', or over a defined box area.

To manually define the area to be 'wiped', the pen is moved into the image area. Pressing down on a point on the image will define one corner of a yellow box.

While keeping the pen in contact with the image area, dragging the pen out across the image will allow the extent of the box area (ie the area to be 'wiped'), to be defined.

Pressing down a second time will fix the opposite corner to the first pen press, and a solid *mask* (in the current *mask* colour) will fill that area.

When *wipe* is selected, two arrow boxes are also recalled. These boxes are vertical (↓) and horizontal (↔). Selecting one of these boxes will enable *wipe* to be used to create a graduated *wipe*, in the selected axis.

After selecting a direction box (ie vertical or horizontal), the colour pot next to the *wipe* function will be replaced by two colour pots. These pots define the luminance's that the graduation will be between; ie the density of the *mask* to be produced. By default these colour pots are black and white respectively, creating a *mask* which will graduate smoothly from opaque to transparent (ie dark to light), in the selected direction.

Changing the luminance colour pots (ie using colours with different luminance values) will have a proportional affect on the gradation of density applied, corresponding to the luminance of the two colours selected.





# Graphic Paintbox 2

**Note:** Selecting vertical or horizontal and then selecting *all* will by default produce wipes that move from dark to light, from the top to the bottom of the screen and from left to right respectively.

## iv *Roam & Select*

The *roam* and *select* functions allow the user to move over the current image and to then 'zoom' into a selected area as required, up to the level of individual pixels, using the arrow boxes.

When using a combination of these functions, very detailed masks can be produced.

**Note:** It should be remembered that when applying masks at very high magnification, that the brush size will stay directly proportional, so small brush sizes should be used.

*Select* enables an area of image defined with a yellow box cursor, to be zoomed; ie this section of image fills the current screen view. Selecting *roam* allows the whole image to be dragged with the pen so that a different section of image can be viewed at the current magnification (a small yellow square relating to the current pen position, indicates that *roam* is active). The *roam* and *select* functions can either be controlled by highlighting the appropriate menu boxes, or they can be accessed from the grip.

Button 1 on the grip enables *roam* and button 2 will highlight the *select* function for as long as it is held down.

Pushing up (↑) on the grip thumb switch will 'zoom' into the 'current image' in steps. Pulling back on the thumb switch (↓) will reduce the 'zoom' in steps, until the whole of the 'current image' is displayed.



1) *select* is used to define an area of the image to zoom into (ie the area within the cross hairs).



2) *roam* is selected to move to that part of the image which is to be zoomed into.



3) The arrow keys can be toggled between to zoom into or out of the current section of image.

## v *Graphics*

If *draw - mask* is selected when using any of the graphic shapes (ie curves, lines, rectangles, circles or ellipses), these shapes will be applied as *mask* areas, in the current *mask* colour, to stencil out regular areas of image.

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## Hicon

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The *Masks* - *hicon* function can be used to generate an automatic 'high contrast' *mask*, based on the changes in luminance or 'density', across the 'current image'. Chrominance is ignored.

By default the system looks for luminance changes between the extremes of black to white; ie dark to light. The darkest areas will have the most *mask* applied while lighter areas will have proportionally less *mask*.

The *hicon* parameters can be altered by for example, replacing the black and white colour pots with new colours, to change the luminance limits. Alternatively the *hicon* 'range' can be altered by entering new 'upper' and 'lower' values. These define the contrast of the *mask*, from opaque to transparent. The ability to alter these values is particularly useful when working with a low contrast image.

A *rev* (reverse) option is also available within *hicon*, which allows the *lo* and *hi* values and colours to be interchanged.

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## Automask

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In the *Masks* menu, the *automask* function can be used to generate a *mask* automatically using manually defined luminance and/or chrominance detectors from the 'current image'.

With *luma* and or *chroma* selected, moving the pen into the image area and tapping down on a point will prompt the system to search for other similar points of luminance and/or chrominance and will *mask* out those areas, with *add* selected.

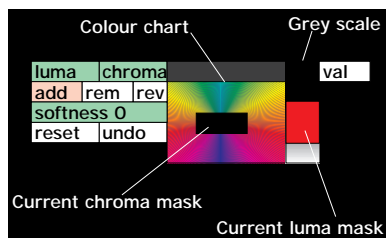
With *rem* selected the system will remove *mask* content from those points of luminance and/or chrominance. Selecting further points on the image allows a *mask* to be automatically built up in this way.

The luminance detector (*luma*) searches for points which have a similar brightness range to the first point selected, while the chrominance (*chroma*) detector, searches for points of similar hue and saturation.

In the middle of the *automask* menu, a colour chart is displayed. This colour chart displays all combinations of red, green and blue, with an additional vertical bar displaying a graduated luminance chart (ie 'grey scale'), from black through to white (ie dark to light).

# Graphic Paintbox 2

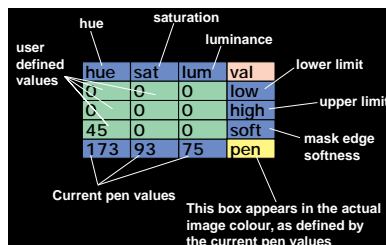
As points of chrominance and/or luminance are selected, the appropriate display will be covered in the menu, to indicate where the *mask* is currently applied.



On the colour chart the current *mask* appears as a black rectangle and on the luminance chart, the *mask* appears in red.

As an alternative to selecting points of luminance and/or chrominance direct from the image and so relying just on the naked eye, the *automask - val* function (short for 'values'), recalls a series of numeric boxes which enable *luma* and *chroma* values to be precisely selected.

The *val* boxes are separated into three columns; hue, saturation and luminance and are each assigned high, low and soft values. The high, low and soft values indicate the upper and lower *mask* limits that the system will use to generate the *mask*.



By moving the pen over the 'current image' (ie within proximity to the Tablet), each point the pen passes over will be displayed in numeric form within the *val* table. The colour of any given point will also form the background colour for the box marked *pen*. By pressing down on a given point the system will generate a *mask* based on the current readings, and will load those readings into the relevant table boxes. These values can then be manually refined to modify the *mask* as necessary.

All *mask* creation is linear (except when using the *do incl* function - see below). This means that at the edges of the masked areas, instead of cutting off sharply at some critical value, can taper off evenly as the colour or luminance changes away from the detected colour.

To refine the edge of a partial *mask* (to for example hide small deviations between the detected colour and the image colour, or to remove the 'halo' artefacts around a masked area), the *softness* control can be employed to gradually extend the *mask* boundary.

If a mistake is made during *mask* generation (for example a point is selected that *masks* an area of image that is not to be included as part of the current stencil), the *undo* function returns the system to the last *mask* set-up. As an alternative to *undo*, selecting *reset* will remove all the 'current mask' parameters, effectively removing the current *mask*.

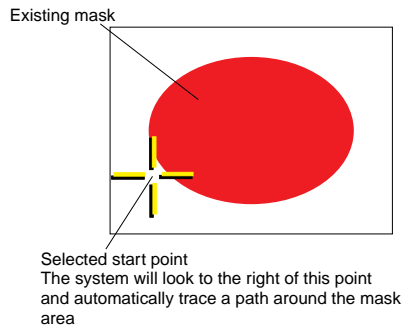
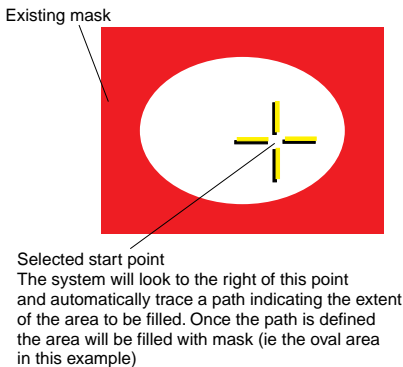
To process the *automask* (ie to apply the 'current mask' set-up to the current image), the *do all* or *do area* functions are selected. *Do all* will process the 'current mask' over all of the 'current image', while *do area* will allow a box area within the 'current image' to be manually defined, to restrict *mask* processing to that area.

The *do incl* function allows any area of existing mask to be further refined. *Do incl* is the abbreviation for 'do inclusive' and can be used to find and fill the largest area of *mask* around a point chosen by the user.

To start the *do inclusive* function, the user selects, *mask +*, *do incl* and then taps on a point within an area of existing image *mask*. From this point the system calculates the area that needs to be filled with *mask*.

**Note:** Selecting *mask -*, *do incl* will remove any filled *mask*.

From the chosen start point, the cursor will be seen to move rapidly around the image as it calculates the required fill area, tracing a path back around to the start point. After a second pass around this border the mask detail is filled in, creating a solid block of *mask* (or removing a block of *mask* with '-' selected):



# ***Graphic Paintbox 2***

# ON-SCREEN KEYBOARD

## ON-SCREEN KEYBOARD

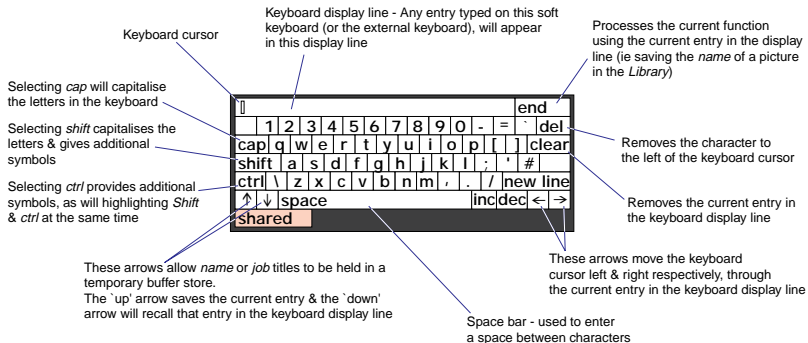
### Overview

The on-screen keyboard (also sometimes referred to as the 'soft keyboard'), is displayed in the various *Library* menus when a text or character entry is possible.

This keyboard operates in conjunction with the external or 'hard' keyboard, the use of either keyboard dependent of the user's preference. Text typed on the external keyboard for example will also appear in the display line of the soft keyboard (*see the diagram below*), and the soft keyboard can then be used to edit that text.

Text can be used to save items (ie *pic*, *mask* or *cutout* for example) under individual *names*, or it can be used to assign a *job* title that will be used to identify a number of individual items as part of the same piece of work or for the same customer for example.

Once items have been saved with *job* or *name* titles, the systems intelligent search facilities enable text to then be used to locate items or groups of items.



K-O

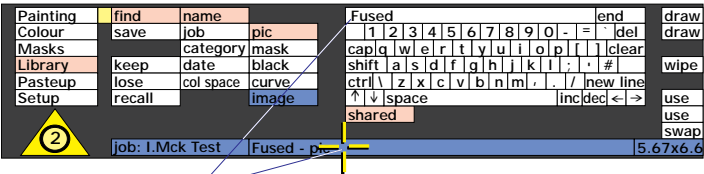
# Graphic Paintbox 2

## A ENTERING CHARACTERS & TEXT

There are three principle methods of entering text with the soft keyboard:

- i The first method is to simply use the pen to tap down on the individual boxes of characters in the soft keyboards menu display. As a box is selected, it will highlight briefly in pink to indicate its selection and the relevant character will then appear in the display line.
- ii Where a *job* title or *name* exists for the last entry that was processed, these titles will appear in the blue display lines at the base of the menu.

By selecting either the *job* or *name* blue menu box with the pen, the relevant text can be quickly and simply loaded into the display line. The text can then be modified as required:



Pressing down on the *name* or *job* box will transfer any text there into the display line. This text will be appended to any text that is already there (ie it will not overwrite that text).

**Note:** Where text already exists in the display line, selecting the *job* or *name* box will append the relevant text to the existing entry. Similarly, pressing the *job* or *name* box more than once will repeat the selected text in the display line, each time it is selected.

- iii A third method of entering text is to use the external keyboard. Because the 'hard' and 'soft' keyboards operate in conjunction with each other, the text will appear in the display line as it is typed. This text can then be edited, again using either keyboard.

## B EDITING

- i If text is typed incorrectly then pressing the delete box will remove the character immediately to the left of the cursor.
- ii The *clear* box will remove all currently typed text (or text which has been retained from a previous search within the *Library*).
- iii The arrow boxes represent two text buffers which can maintain text for further use.



## **CHAPTER 5**

### **TOPICS P - T**

**P - T**

# ***Graphic Paintbox 2***

## PAINTING

### Overview

Painting is the process of creating or retouching pictures using the pen in a number of different styles, to create an on-screen image in a similar way to using conventional artistic media. Additionally, the system can produce effects that would be very difficult to create in any other way, outside of this medium.

The system's painting and graphics tools are accessed via the *Painting* main menu item. Once selected, to paint directly to the 'current image', the menu must first be swiped off screen.

The machine always starts up with black on the pen but when the pen colour is changed (*see "Palette" in this chapter*) the small colour pot to the right of the *Painting* box in the main menu, will display the current pen colour.

Exerting normal pressure, with the menu and palette swiped off screen, draw the pen across the Tablet and you will draw a line, the natural qualities of which are immediately apparent.

### A THE PEN AS PAINT BRUSH

The pen is pressure sensitive and therefore performs in much the same way as a pencil, depositing more colour the harder it is applied. It is extremely sensitive, so the lightest pressure will produce a correspondingly delicate, transparent shade of colour. Continued rubbing at this pressure will build up colour until full opacity is reached.

Experiment with the pressure and note that a line may be graduated from 0% - 100% in one controlled stroke, as long as *density* is selected. It is this feature which holds the key to the mixing of colour and hence to naturalistic painting on the system.

The pressure-sensitive nature of the pen in *Painting* can be varied by altering the density values.

# Graphic Paintbox 2

The brush thickness or colour is changed either by changing the *size* of the brush within the *Painting* menu or within the palette menu (recalled by swiping down or up off the screen). The palette reveals 42 boxes (or 'pots') containing, or ready to accept, colours. The system is delivered with a basic palette containing shades of grey from black to white, primary and colour bar colours. From this palette it is possible to mix something of the order of sixteen million colours - far beyond the range of human perception.

The *Painting* menu offers three basic brushes (*paint*, *airbrush* and *chalkbrush*) which in turn are supplemented by more specialised creative brushes, such as *smudge*, *wash*, *ctl paint* and *shade*.



*See also: Colour Control.*

**Note:** It is not possible to use *big* brushes when in *normal* painting mode, only in *rev paint* mode (*see below*).

## B REVERSIBLE PAINT

Instead of a permanent application of colour, the *rev paint* function enables paint to be added **and** removed before it is finally stuck onto the image. This allows for experimentation and provides the user with the ability to 'fine tune' creative or retouching work. Any brush type and size (including the *big* brushes) can be used.

Once *rev paint* is highlighted, the last colour selected on the pen will be the colour applied when painting direct to the image. This colour will not alter until the *rev paint* function is de-selected, or until *finish* is selected to permanently apply any changes.

The ability to add or remove paint is controlled by the '+' and '-' buttons or by toggling the Hand Unit control button to the left or right (left allows paint to be added and right allows paint to be removed). The *finish* function permanently applies any alterations made up to that point.

**Note:** Only paint applied with *rev paint* - '+' selected can be removed.

*Reversible paint* can be constrained with the *mask* function, to add or remove only from a defined area. If *mask - use* is de-selected before *rev paint* is completed or before the function is aborted (ie *rev paint* is no longer highlighted), all painting up to that point will be revealed. Those areas of the image that were previously protected by the *mask* are revealed and wherever the brush entered those areas, paint will be shown. This function also works with the 'zoom' arrows and scrolling tools (*roam* and *select*), so that alterations can be made at any magnification and from anywhere on the 'current image'.

# PAINTING

When used with the *swap* function, any paint currently added, but not yet permanently applied with the *finish* function, will be shown over the 'swapped' image. The add and remove functions can still be alternated and *swap* can be re-applied as many times as required.

*Reversible paint* (and *reversible black* - see *chp 1 "Black"*) is particularly useful when working with soft edged stencils and/or low pressure air brushes, as it uses an additional set of combiners which employ dynamic rounding to reduce any potential banding effects.



*See also: "Masks", "Palette", "Pen Control", "Zoom".*

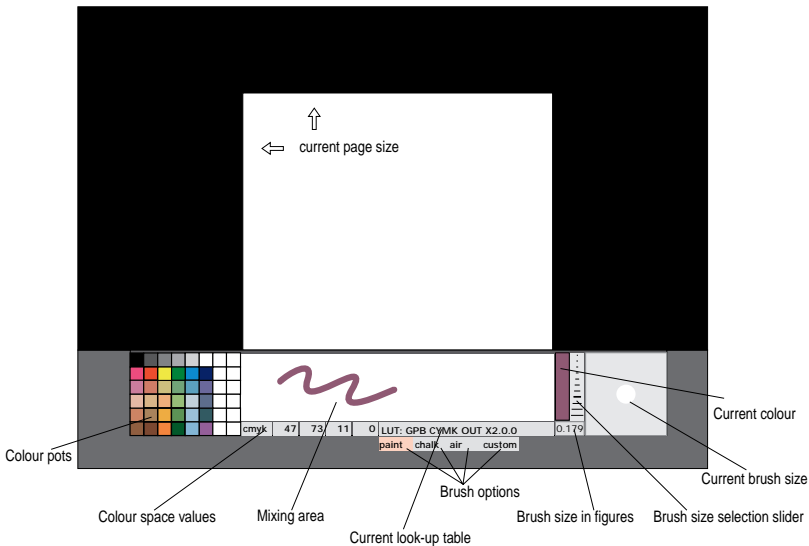
# Graphic Paintbox 2

## PALETTE

### Overview

The palette is the area of the screen which is used for selecting brush sizes and mixing colours. The palette is recalled by swiping up or down out of the image area, or pressing button 3 on the Grip.

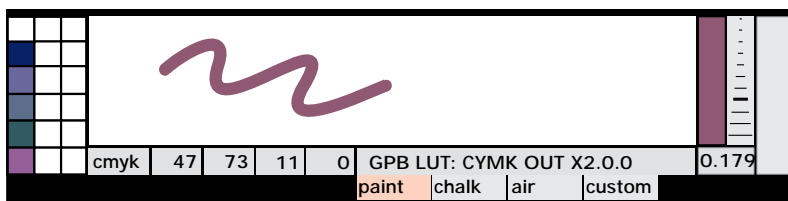
Colours can be selected from the colour boxes (also known as colour 'pots'), or directly from the 'current image' on the screen. A colour, once on the pen, can be mixed with any other colours in the mixing area to produce intermediate shades.



On the left side of the palette is a group of 42 boxes (ie the colour 'pots'), some of which contain the basic primary and secondary colours and shades of light grey through to black.

About half of the palette colour pots are left white. These can be used for user-definable colours which have been mixed in the mixing area or extracted from the picture. Loading a colour onto the pen and then pressing down for a short time on a pot will load the current pen colour into that box.

# Graphic Paintbox 2



The centre white panel of the palette is the mixing area. Colours may be selected from the colour pots and/or the image area and deposited in the mixing area with any of the different brush types.

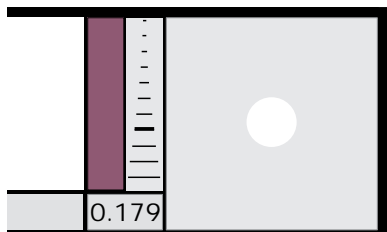
Each colour can then be brushed over with any amount of any other colours to produce intermediate shades and tints.

The box to the right of the mixing area is filled with the currently selected pen colour. Pressing down on this box will wipe the mixing area to this colour.

Within the colour palette, the system brushes can also be activated. This is extremely useful when working with many brushes, as it alleviates the need to continually scroll back and forth through multiple brushes to find the default brushes. When the software is started, the *custom* box on the palette automatically selects the *airbrush* until another *custom* brush is selected from the roller bar menu. The last active custom brush can be recalled when entering the colour palette.

## A CHANGING THE BRUSH SIZE

Pressing the pen down on one of the preset size lines (ie the series of black lines of increasing width next to the current pen colour box), will set the brush size to a diameter proportional to the line width selected.



The numeric box below the series of size lines gives the value of the current brush size.

By selecting this box the brush size can be manually altered numerically.

Further revision of the scaleable brush is possible with the box to the right of the size lines; ie the box displaying a white circle which represents the current relative size of the brush. By pressing down on this circle and then sliding the pen, the brush size can be manually increased or decreased as it is pulled in or out to a new width.



Tapping down in the square around the white brush size circle will prompt the system to expand the brush to the selected point (until the maximum brush size is reached), or if the pen is pressed inside the circle itself, the diameter will be reduced so that the edge of the brush circle lies on the point selected.

## **B TO LOAD A COLOUR ONTO THE PEN**

Place the cursor over one of the colour pots or onto an area of picture with the colour required and tap the pen down quickly (ie approximately 1 second). When using the colour pots, it should be remembered that sustained pen pressure will result in the current pen colour over-writing the colour that you were attempting to load.

When selecting colours it is useful to remember that the area below the palette mixing area will display the current colour numerically. This feature can be used to make very accurate colour selections.

With the palette displayed for example, pressing down with the pen and moving over the image, will prompt the values to update with each colour the pen passes over. Tapping down at any point will 'pick-up' the colour under the pen at that point; ie it will become the current pen colour.

**Note:** As colour may be selected from anywhere on the screen, provision has been made for the palette to be displayed at the top of the screen, to allow colour selection from the area of image that would otherwise be obscured. With the palette displayed, swipe up or down to place the palette at the top or bottom of the screen, respectively.

## **C TO MIX & DEPOSIT COLOURS**

Having selected a colour with the pen this colour can then be 'painted' over a small section of the mixing area as the first colour to be 'mixed'. By then using the pen to select further colours, these can be 'painted' lightly over those previously placed in the mixing area to produce a mix of the two or more different colours.

The harder the pen is pressed the more opaque the 'paint' is, therefore a fairly light 'painting' action is better served when adding colours to mixing area, to allow a more transparent application of colour. This is to allow colours to show through and 'mix'.

**Note:** The *airbrush* is particularly useful when mixing colours, as its gradual soft edge helps to produce more shades and subtle variations in colour than may otherwise be possible.

Tapping the pen down quickly in the intermediate 'mix' area will pick up the mixed colour at that point; ie that colour becomes the current pen colour.

# Graphic Paintbox 2

This new colour can then be painted with or if it is required for use in the future it may be deposited into one of the colour pots by pressing the pen down hard on a pot that you do not mind overwriting. Pressing for about two seconds should be sufficient time for the new colour to overwrite an existing or empty colour pot.

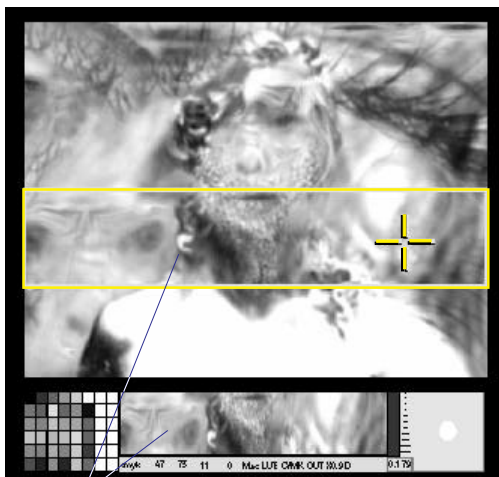
**Note:** A quick pen press will not deposit the colour but merely pick up the colour already loaded in that colour pot.

The excess of white colour pots are intended for use for user defined colours, but any colour pot can be overwritten with a different colour if required. In this way, user defined palette's can be generated.

If at any stage colour pots are overwritten by accident and you wish to return to the default palette display, this can be achieved by selecting - *Setup - palette - restore*. This function will restore the colour pots in the first six columns to their default colours, leaving the remaining pots with their custom colours.

## D CREATING A PALETTE FROM THE PICTURE

By selecting *create* from the *Setup - palette* menu, it is possible to take a section of the picture and deposit it in the mixing area.



The area defined within the yellow rectangle is duplicated in the palette's mixing area, when the rectangle is pressed down onto the image. Colours can then be selected directly from the mixing area.

When selected, *create* gives a rectangular box with the same proportions as the mixing palette.

Positioning this over the desired part of the picture and pressing down once with the pen, copies the required section of the image into the mixing section of the palette where it can then be used as required.

## E TO CLEAN THE PALETTE

The palette mixing area may be 'cleaned' by:

- i Selecting a large brush and over-painting with the desired background colour (usually white).
- ii Applying continued pressure to the colour indicator block on the right-hand side on the palette. The palette will then wipe to the colour contained within the colour block.

## F TO DRAW WITH A NEW COLOUR OR WIDTH

To draw or paint with a new colour, the *Painting* menu must be active but swiped off screen and the palette must also be removed. To remove the palette, swipe the pen off the Tablet, out of the image area.

Attempting to paint to the current image with the palette still displayed will only result in the pen picking up colour wherever it is applied to the current image.

The pen is pressure sensitive and therefore deposits more colour the harder it is applied. This sensitivity means that the lightest pressure will produce a correspondingly delicate, transparent shade of colour. Continued 'rubbing' at this pressure will continue to build up colour until full opacity is reached.

The pressure sensitive pen allows a line to be graduated from 0% to 100% in one controlled stroke, if the *density* default is highlighted. It is this feature which holds the key to naturalistic painting on the system.



*“Painting”, “The Pen”.*

# ***Graphic Paintbox 2***

## PASTEUP 3D

### Overview

The *Pasteup - 3D* menu enables cutout images and stencils, to be positioned anywhere within the imaginary three dimensional space of the monitor screen. Once manipulated, cutouts can be permanently applied in their new aspect to the 'current image' to produce composite images.

The cutouts which are to be used with the *Pasteup* functions can be generated from within the *Pasteup* menu itself; ie a cutout can be manually generated from the 'current image' with the *cut* function. Alternatively, an image can be fetched from the *Library* as a cutout.



#### "Cutouts".

Where multiple cutouts are to be used (ie with the *cutout - many* box selected) the *Pasteup* effects will be applied to the 'current cutout' as indicated by the number of the cutout next to the *cutout* box.

**Note:** The *Pasteup* functions will not be applied to the 'current image', only to the 'current cutout'. At least one cutout must therefore exist before attempting to apply the *Pasteup* functions.

To enable cutouts to be positioned anywhere within three dimensional space, each is given three position (*pos*) co-ordinates;

'x' -	Horizontal
'y' -	Vertical
'z' -	Perspective or 'Depth'

Similarly, to *spin* a cutout in 3D it is given three 'spin' values and to *size* a cutout it is given three 'size' values.

Each cutout is held within the system as a flat 2D (two dimensional) image, then manipulated in 3D space before being projected back on to the 2D screen. Cutouts are manipulated with 3D modelling equations (processed by the system computer), controlled by the user defined values of 'x', 'y' and 'z' for position, size or spin, as appropriate.

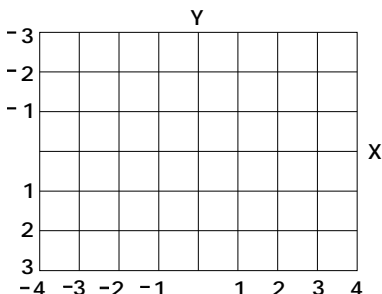
# Graphic Paintbox 2

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## 3D Grid

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The position of any image on the monitor screen is defined by an 8 x 6 x 12 grid (corresponding to x, y and z values), with a centre at 0x, 0y and 0z. Values are calculated and entered in grid units and decimals of grid.



The 8 x 6 grid matches the 4 x 3 aspect ratio of the monitor screen.

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## 3D Axis Control

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The system allows a cutout to be manipulated within 1 of 2 axes, the 'picture' / 'image' axis, and the 'screen' axis.

The 'image' axis is the default axis, selected automatically by the system. When manipulating a cutout in this axis, any rotation for example, will be performed using the centre of the 'current cutout' as the zero position, and will rotate relative to this centre.

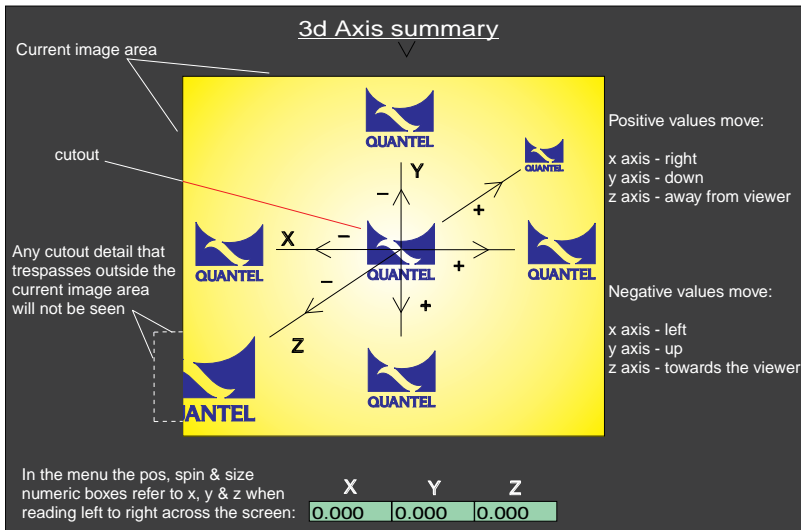
The 'screen' axis is applied when the *screen* box is selected in the *Pasteup - spin* menu. The 'screen' axis is the fixed point at the centre of the monitor screen. This allows the 'current cutout' to be moved in the 'screen' axis rather than in its own 'picture' axis.

Selecting *axis* gives the cutout a visual representation of its x, y and z axis. Each cutout has an axis about which it rotates, when it is selected and the *spin* box is highlighted. The axis is normally invisible and is, initially, at the centre of the cutout. The axis will only become visible when *pos*, *spin* or *size* is activated. If the *axis* box is selected, *pos*, *spin* and *size* will act on the axis itself rather than the cutout, allowing the axis to be moved. If the *axis* box is then deselected and *spin* selected for the cutout, the cutout will spin about its new position of the axis.

## Manipulating A Cutout In 3D

There are two methods of controlling the application of a cutout within each of the *Pasteup* menu selections. The cutout can be controlled either with the pen in the image area, or with numeric boxes which control the application of a function and hence how the cutout will move in three dimensional space.

In each of the principle *Pasteup* menus (ie *pos*, *size* & *spin*), the current axis is defined by selecting one of the three green numeric boxes, which will be highlighted in pink to indicate its selection. These three boxes relate to the x (horizontal), y (vertical) and z (depth) axes when reading left to right across the screen.



When multiple cutouts are to be used, the *Pasteup* operation will be performed on the currently selected cutout; ie the cutout whose number is indicated next to the *cutout* menu box. Sticking a cutout down in the *Pasteup* menu will produce an identical copy of that item directly over the top of the original. This can be manipulated in the same way as the original, as required, or deleted if it is not needed.

Multiple cutouts can be assigned different 'priorities', so that those cutouts with the higher 'priority' number will always appear in front of those with a lower 'priority' value, during any *Pasteup* operation and when they are permanently applied to the 'current image' in their current aspect, with the *stick* function.

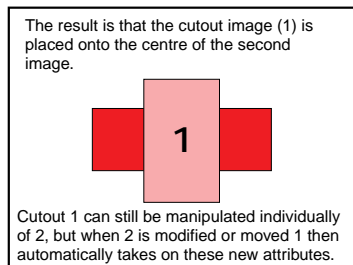
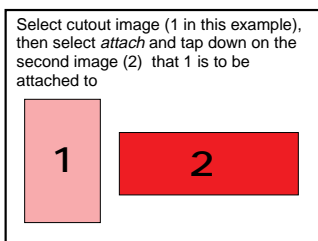
# Graphic Paintbox 2

Multiple cutouts can also be repositioned, resized, spun and pinned as a group, using the *global* box. If *global* is selected in one menu then it will also be active in other menus.

If *global* is selected when the axis is moved, the global axis will be moved (it is shown in blue and is initially in the centre of the background image and in the plane of the screen). Once the global axis has been moved, the *global* box will be highlighted in blue when turned off. Cutouts cannot be pinned after the global axis has been moved, until it is reset to its original position (by selecting *original* and then *global*).

Multiple cutouts can also be linked together and manipulated in respect to each other with the *attach* box. This function differs from *global*, as the user can make a choice over which cutouts to link, not all cutouts need to be selected.

To attach a cutout, select a cutout image (1) and then highlight *attach*. Now a second cutout (2) has to be defined by tapping onto the area of the second image. Once this has been achieved, the original cutout (1) will jump onto the top of the second image and assume any size/pin/spin attributes. However, the original cutout (1) is still free to be worked on independently of the second, as it is only when the second cutout is modified that the changes will be made as a group of attached items.



While a cutout is attached to another cutout, it cannot be pinned.

It is also possible to: attach several cutouts to a single cutout, forming a 'group'; attach cutouts in a chain, where the first in the chain moves all of the other cutouts, but a cutout in the middle of the chain would only move those behind it. It is not possible to attach the first cutout in a chain to the last.

To detach the cutouts, select the currently attached cutout to be moved, and then highlight the *detach* box (previously viewed as the *attach* box).



For further detail on cutouts, see *chp 2 - "Cutouts"*.



## A PASTEUP & MASKS

The *mask* function box is available in the *Pasteup* menu to constrain both where cutouts will appear over the current image and/or which sections of a given cutout will be available to apply to the current image.

If *mask* is applied to the current image and *use* is selected, only in those areas where *mask* does not appear will any cutouts be seen.

If one of the currently loaded cutouts contains *mask* detail and *use - mask* is active, only those areas of the cutout which have not been masked will appear in the final, composite image.



“Mask”.

## B CUTOUT TRANSPARENCY

In addition to the *mask* control, the density of a given cutout can be varied in the *Pasteup* menu itself. The density can be varied from 0 (transparent), through to 100 (opaque) to allow for a variety of creative effects in the final composition.

## C PASTEUP - PIN / TAGS FUNCTIONS

The *pin* function offers a means of controlling and manipulating a cutout from any one of four associated *tags*.

When *pin* is selected, four arrow boxes are displayed in the menu. Each of these boxes corresponds to one of the four *tags* of the current cutout, the direction of the arrow indicating which *tag* it relates to.

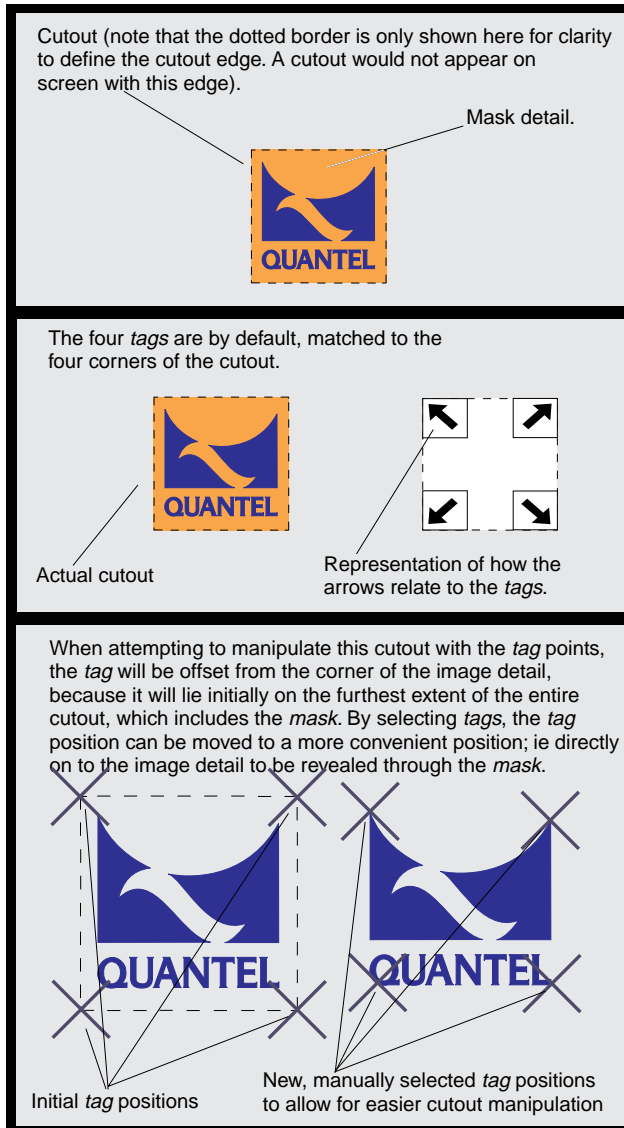
*Tag* points are by default linked to the four corners of the cutout. These points are seen as small yellow arrows on each corner, allowing the user to clearly see the pin positions. When the pen is placed in contact with the image area, pressing down will prompt the cursor to jump and automatically lock onto the current *tag* position

*Tag* movement (and therefore cutout movement from the selected point), can be controlled from two numeric boxes (for movement in the X and Y axis respectively), which appear alongside the arrow boxes when one is highlighted.


The shape of a cutout can also be manipulated manually on screen by dragging one of its four *tag* points with the pen. When pressure is released (ie the pen is lifted out of contact), the *tag* (and therefore that point of the cutout), will be ‘pinned’ in this new position.

# Graphic Paintbox 2

The advantage of using *tag* points is that they can be repositioned around the cutout to positions that are most suitable for the user; ie they do not necessarily have to sit on the four corner points. This is often particularly useful in the case of a cutout which has a large amount of *mask* detail, as in the following example:



The process of re-positioning a *tag* is as follows:

- i First select the *tags* box.
- ii The *tag* which is to be moved is then either selected by highlighting the corresponding menu arrow box (ie , or by moving the pen in the image area near the required corner of the cutout.
- iii When pressing the pen down, the cursor will jump to the required *tag* point which can now be dragged under pressure to a new position.
- iv When pressure is released (ie the pen lifted out of contact with the Tablet), the *tag* will be set in this new position.

This will be the point the system jumps to when the pen is used to drag the cutout from this *tag* point (ie section 3 in the previous diagram).

# ***Graphic Paintbox 2***

## PRINT CONTROLS

### Overview

The system's print controls can be used to create custom 'lookup tables' (LUTs), for individual images or groups of images. A 'lookup table' is a three dimensional colour table which is used to control the correct balance of Cyan, Magenta, Yellow and black (CMYK), for printing.

The print controls are accessed from within the *Setup* menu (ie *Setup - print ctrls*) and are subdivided into functions for *cmv* and *cmvk* images.

The print control parameters that can be modified include:

- i **Black Curves** control the way in which a black is applied to images to effect specific changes to benefit both the detail present and saturation of colour.
- ii **Ink Limit** - This refers to the application of *UCR* (Under Colour Removal) and *GCR* (Grey Component Replacement) to control the overall printing ink coverage. This can be further controlled by creating a custom apply curve.

The 'ink limiting' functions are only available with the *print ctrls - cmvk* selection.

- iii **CMYK refine** allows greater colour channel control. This can be used to make final adjustments to correct a specific separation and is often applied to correct 'dot gain' in any one of the four colour channels. The *dot adjust* function in the *cmvk refine* menu, can be used to apply a change to all four colour channels at once.

The 'cmvk refine' functions are only available with the *print ctrls - cmvk* selection.

**Note:** Loading an image and then loading a previously saved 'lookup table' will also load that table's parameter settings into the print controls menu. This means that when selecting *Setup - print ctrls*, the graph displays will appear as they did when the LUT was created; ie the creation parameter settings are applied, not necessarily the last time it was saved, as the LUT details may have been different.

# Graphic Paintbox 2

## A BLACK CURVE

GPB 2 provides the facility to enable the user to view and modify the profile of the black printer generation on output. The black curve that results from this can be seen as the *default* option in the *print ctls - black curve* menu. Where the original scan data is correct it is unlikely that there will be a need to modify the *default* profile. However, if the scan data or the on-screen image needs to be corrected for local printing conditions or for special effects, then the 'black curve' menu provides the facility for such changes to be made.

The 'black curve' menu offers a number of pre-defined curves which can be used as the basis for modification.

Black curves can be edited and used in conjunction with other ink weight controls including *UCR* and *GCR* (see "*Ink Limiting*", in this section). Editing is via the combination of monitor display, pen and Tablet functions as described in "*Graph Control*" below.

# PRINT CONTROLS

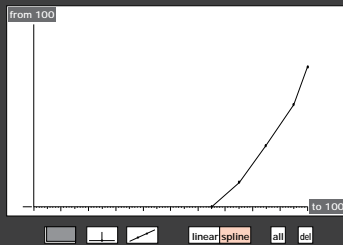
## B GRAPH CONTROL

The graph displayed in the image area for each of the *print ctls* sub-menus (ie the area above the menu display), will be amended automatically with each parameter adjustment. Selecting *cmY* or *cmYk* - *black curve* for example and then switching between the *long*, *short* and *skeletal* options will prompt the system to re-calculate the graph for each of these types.

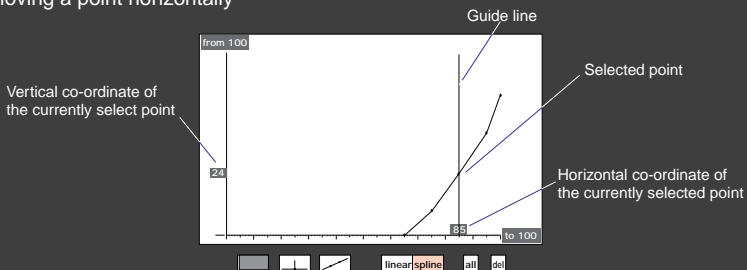
The graph is fully interactive, allowing the user to customise the 'lookup table' to their own specification. With a preset graph displayed (*cmYk* - *black curve* - *skel*, for example), moving the pen into proximity to the screen and then pressing on a point on the graph, will allow that point to be dragged to a new position in either the horizontal or vertical axis. In this way a customised graph can be gradually built up.

The examples below depict a graph with a point that is to be moved to a new position on the horizontal axis:

1) System preset - Skeletal black curve

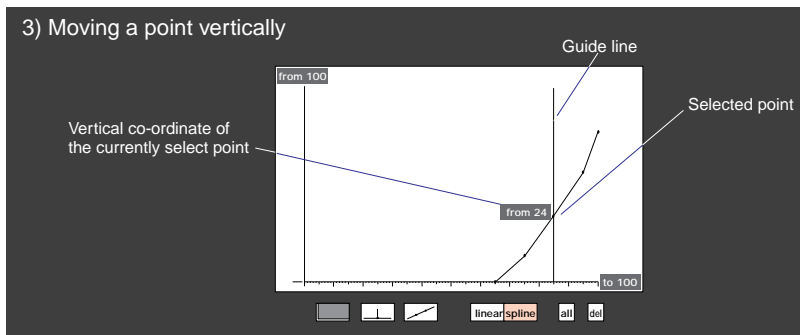


2) Moving a point horizontally



# Graphic Paintbox 2

Once a point is selected to be moved, dragging the pen left/right or up/down will determine in which axis the selected point can be moved. To move a point in the opposite axis, it is first de-selected, re-selected and then dragged in the required axis.



Pressing anywhere on the current graph will insert a new reference point or 'node', which in turn can be dragged in either axis. As a point is dragged the graph will be amended accordingly.

In the menu display the *pt*, *x* and *y* boxes are available to allow a graph to be altered numerically. The *pt* box (point) refers to a node point. Nodes are numbered from 1 at the 0/0 graph point, to *n* where *n* is the last node on the current graph. By selecting the green *pt* box the number of the node that is to be altered can be entered.

The *x* and *y* boxes refer to the position of the currently selected node in the *x* (horizontal) and *y* (vertical) axis. Adjusting the values in the related green numeric boxes will move the currently selected node point to the new position indicated.

**Note:** When a graph is manually altered from a system preset, the blue information box in each of the print controls menus will state "user". This is to indicate that an amendment to the graph has been made.



*See Menu Reference - chapter 6 - "Print Controls".*



# PRINT CONTROLS



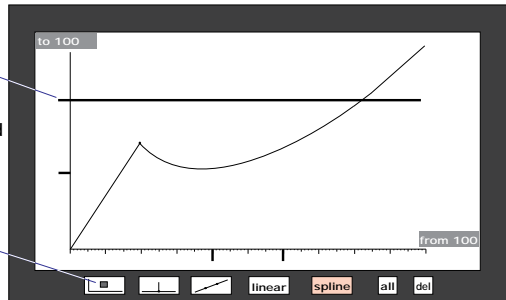
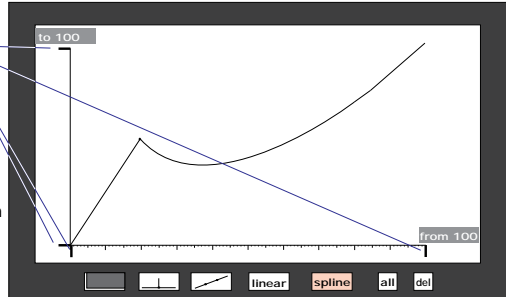
Selecting this box enables the graph 'zoom' function. The 'zoom' function can be used to magnify a selected area of the current graph to manipulate a curve in fine detail.

Four markers are positioned outside the graph - 2 on the X axis and 2 on the Y axis.

The markers are used to define an area of the graph which will be zoomed to when the graph zoom box is selected.

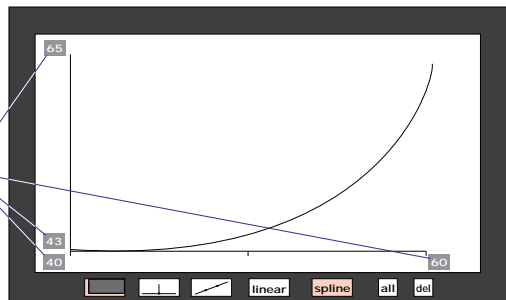
Pressing on a marker with the pen produces a solid black line over the graph. While maintaining pressure, drag the marker to a new position.

The area of the graph to be zoomed to will be represented by the area of grey in the zoom box.



When the zoom box is selected (ie highlighted pink) the area of graph within the four markers will be expanded to fill the entire graph screen.

The markers are replaced with boxes detailing the points on the appropriate axis that the graph detail lies between.



P-T

# Graphic Paintbox 2

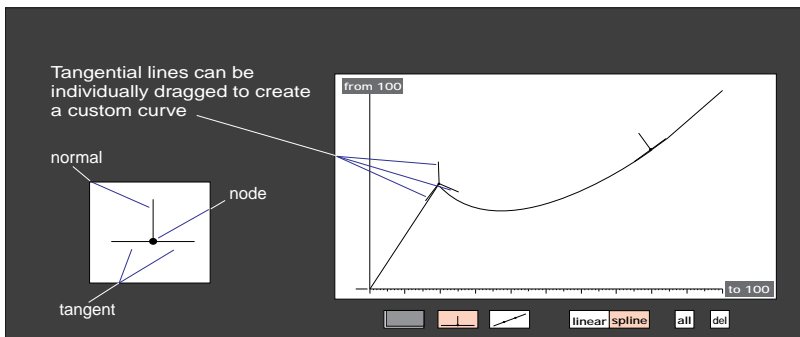
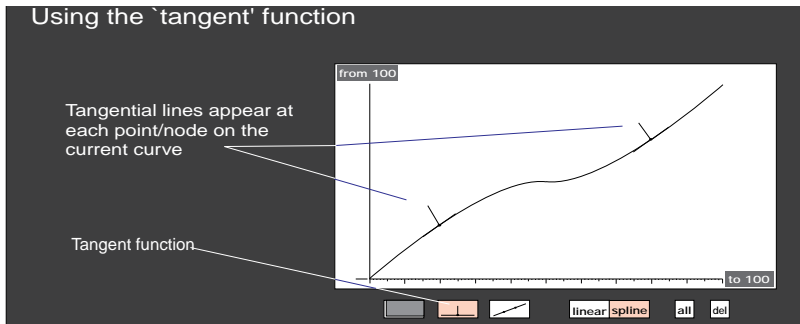


By selecting the 'tangent' function, the segments which make up a curve can be controlled by 'tangent' and 'normal' lines, which appear at each point on the curve:

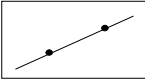
By selecting the 'tangent' function the segments that make up a curve can be controlled by 'tangent' and 'normals', connected to the nodes of each curve segment:

- 1 Pressing on a 'normal' allows it to be moved and will affect the line passing through the node in both amplitude and direction.
- 2 Pressing on a 'tangent' allows it to be moved but will only affect the curve emanating from that side of the node.

## Using the 'tangent' function



# PRINT CONTROLS



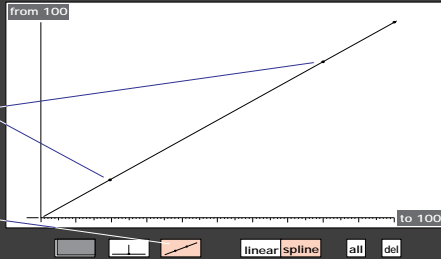
With this 'mirror' box selected, manipulating one point of the graph will produce a mirror image of that action on the opposite side of the curve; ie mirrored from a point half way along the current curve.

The example below uses a straight graph line, created by selecting *del - all*:

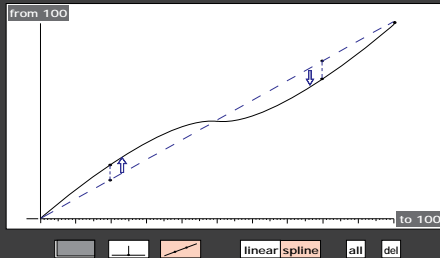
## Using the 'mirror' function

1. Selecting a point on the current graph will create a 'mirror' point on the opposite side of the graph

'Mirror' function



2. Dragging a point will also produce a duplicate movement of the opposite or 'mirror' point



# Graphic Paintbox 2

## C INK LIMITING

Selecting the *ink limit* function in the *print ctls - cmyk* menu, recalls the *UCR* and *GCR* options; ie Under Colour Removal and Grey Colour Replacement, respectively.

*UCR* and *GCR* can be applied to reduce the overall printing ink coverage. The benefits of this include an improvement in the reproduction of detail in the image, cost savings from using less CMY inks (which are more expensive than black), shorter drying times from the application of less ink (which in turn allows for quicker print runs), and finally for increased saturation.

*UCR* and *GCR* can solve problems encountered with working on difficult substrates such as newspaper, by reducing the overall amount of ink used.

Reducing the amount of ink to be applied to a print job can also have significant benefits when reproducing high quality art images, when too much ink applied can cause shift and slide registration problems.

Although both *UCR* and *GCR* each share the benefits outlined, both are disparate in the way they reach these common ends.

*UCR* reduces the ink weights needed to produce near neutral colours by replacing a proportion of the CMY 'kinks' with an increase in the proportion of the black (K) ink. Colours which are susceptible to the beneficial effects of *UCR* will be found in the deep shadow areas of an image.

With the correct application of *UCR* it is possible to save ink weight and costs without sacrificing quality. Indeed, due to the lower ink weights used when *UCR* is applied, the registration, smudging and drying problems associated with high total ink weights can be eliminated.

*UCR* is applied as the total ink weight increases toward a final level. Without *UCR* the total ink weight could reach 400%. For this to happen the C, M and Y components must be of high percentage implying a dark, near neutral image. If the maximum ink weight is set to 340% then as the CMY inks increase, their rate of growth will be slowed down and replaced with an increase in the rate of growth of the K channel. This process will then limit the sum of the ink weights to 340%.

*GCR* will replace a proportion of the neutral component of all colours with black ink. At its maximum effect, any colour printed with C, M and Y inks can be defined by the two major ink weights and a black component. This saves total ink weight without sacrificing quality.

# PRINT CONTROLS

Due to the grey component being removed everywhere and replaced with black, the benefits of *GCR* are in reducing registration problems during print runs, which may become apparent using *UCR*. This becomes particularly crucial for example, when matching up the two halves of a double page spread where uniformity between the pages is vital.

The *apply curve* can be used to increase or decrease the transition of the effect of *UCR* and *GCR*. Because the *apply curve* can be manually manipulated, the introduction of *GCR* can be carefully controlled to avoid the problems of banding that often result as a consequence of sudden application.

## D CMYK REFINE

The *cmym refine* option can be used to apply controlled and specific compensation to allow for a change or increase of the half tone dots that will eventually make up the printed page.

By selecting cyan, magenta, yellow or black the individual colour separation can be altered to suit a desired result. Each graph appears in the appropriate colour to indicate which separation is currently selected and the graphs can be manipulated using any of the Graph controls (see “*Graph Control*”, in this section). Alternatively, by selecting the *all* control, all four colour separations can be adjusted at once.

## E DOT ADJUST

The *dot adjust* function is found within the *cmym refine* menu and allows dot adjustment to be altered across all four colour channels at once.

The GPB 2 system operates by ‘carrying through’ the ‘dot gain’ defined by the CMYK input data for a particular image. To maintain this and apply no further correction, the *dot adjust* value should be set to 0.

However, to correct for different conditions between the input and output data the *dot adjust* value can be amended accordingly. Positive values imply an increase in ‘dot gain’ percentage and negative values a decrease.

The monitor gives a representation of the printed result at a ‘dot gain’ of 18% and this can be used as a guide in determining any adjustment in ‘dot gain’. If it is decided that ‘dot gain’ adjustment is necessary, it is advised that more thorough tests involving grey wedges and density measurements should be used to analytically set the *dot adjust* figure.

# ***Graphic Paintbox 2***

## RESTORE

### Overview

The *restore* function allows one picture to be selectively revealed through another allowing sophisticated composition and collage effects to be produced.

The *restore* function is found within the *Painting* menu.

#### A USING RESTORE

- i Load the picture to be restored through as the 'current image', by selecting *new bgnd* and the picture required from the *Library* menu. This image will provide the canvas through which a second image is to be revealed.
- ii Load the picture to be restored into the *swap* buffer by selecting *fetch*, *cutout* and the picture required from the *Library*. The chosen picture will be displayed on the screen.
- iii Position the picture to be restored in the correct place on the canvas using the *xpos* and *ypos* boxes or by dragging/sliding the cutout across the screen with the pen.

**Note:** Temporarily reducing the opacity of the picture from 100% to 60% is useful for accurate positioning.

- iv Return to the *Painting* menu and select *restore +*, and the type of brush to be used (*paint*, *airbrush* or *chalk*).  
Select *v* (view) if you wish to see the restore image again.
- v From the palette select the size of brush (the colour on the brush is irrelevant).

**Note:** The *restore* function can be used with the *normal* **and** *big* brushes. When using the *big* brushes, the *big* function should be selected before accessing *restore*, and the *big* brush 'scaling factor' selected. It is not possible to change the *big* brush 'scaling factor' once the *restore* process is in operation; ie to change the big brush size de-select *restore* and then re-select the brush scaling factor.

- vi Swipe off to the screen and begin painting the areas where the *restore* is required.

# Graphic Paintbox 2

- vii When the *restore* is complete, select *finish* and the restored image will become permanent.

To undo the *restore* (before *finish* has been selected) either select '-' and manually 'paint' back in the areas of image that have been restored with the second image, or de-select *restore* to lose all the current changes and therefore return to the original image.

Re-selection of *restore* will enable the restore process to be attempted again with the current *swap* picture.

**Note:** A new picture loaded into the *swap* buffer will only become the new picture to be restored when *restore* is de-selected.



1. The current image (recalled from the *Library* as a *new bgnd*), through which a second image is to be restored.



2. The *restore* image, recalled with *fetch* from the *Library* and then positioned over the current image as a *cutout*.



3. After selecting *Painting - restore*, the cutout is selectively restored through the current image to form the composite image shown in picture 3. This can be saved as a new image under a new name.



## B RESTORE & THE GRIP

When in *restore* mode, the Grip enables the user to access a number of functions that will assist in the restore process.

Toggling left or right with the Grip thumb switch for example, will select the *restore* '+' and '-' functions respectively. Pushing up on the thumb switch will decrease the viewed area of the 'current image', up to the size of only a few pixels; ie a 'zoom' operation is performed. Pulling down on the thumb switch will increase the viewed area of image, until the whole of the 'current image' is displayed again.

Button four on the Grip recalls the view function (ie the 'v' function in the menu). This will display the 'current cutout' in its current aspect; with the image it is being restored into, as though the whole image has been restored.

Button three displays the entire original image in *restore* mode, to enable the user to see the effect of the *restore* changes.

Button two on the Grip will give access to the *select* menu function, which enables a section of image to be 'zoomed' into. Similarly, button one will select the *roam* function, to move the currently viewed section of image. The *restore* operation cannot be performed while the *select* or *roam* controls are active.

## C RESTORE & THE COLOUR MENU

During a *restore* operation it is possible to leave the *Painting* menu and enter another menu to perform a separate operation and to then return to the *restore* function at the same point of 'restoration' (as long as the menu or function to be applied does not change the 'current image' or the 'current cutout'; ie the *swap* function or the *Library - new bgnd* function should not be used).

An example of where this ability to switch between menus while in the process of restoring an image would be useful, is for example when there is a need for a colour correction on whole or part of the 'current image'. To exchange menus and to then return to the same point of the *restore* operation, *restore* is left active when menus are exchanged; ie do not switch off or de-select *restore*.

By leaving *restore* active, any change in detail to the 'current image' will be remembered by the system, although those changes will temporarily disappear from the screen when the second menu is entered.

# Graphic Paintbox 2

When *Painting* is re-entered, the restored cutout will re-appear in the same position and at the same point of restoration. Any changes made (for example, a colour correction across the whole image) will not have been applied to the restored cutout. The addition or subtraction of the cutout can then continue through the amended image.

The advantage of leaving the *restore* function active during a colour correction for example, is that on returning to the *Painting* menu, the main image as it appeared before the alteration was applied, can also be restored in the same manner as the cutout.

With '+' (add) selected, the current brush can be used to *restore* (bring back into the now colour corrected image) both the cutout and the 'original' current image.

When the remove '-' function is selected, both the cutout and the 'original' current image can be removed from the colour corrected image. The original image and the cutout are in effect, combined.

Any colour correction operations that have been applied can be very precisely constrained to specific areas of the 'current image', by only recalling those parts of the original image that are not to be touched.

Because of the accuracy with which corrections can be applied to an image by incorporating them with the *restore* function, it can be useful to use *restore* as a regular method of applying alterations, instead of simply restoring different cutouts. For example:

- i The image that requires alteration or correction is selected from the *Library* and introduced as the 'current image' using the *new bgnd* (new background) function.
- ii A copy of this image is produced as a cutout using the *cut - all* functions. This will overwrite any 'current cutout' if the *many* function is 'off'.
- iii Entering the *Colour* menu, a correction can be applied; for example a colour *match* could be applied to all of the image (using the *do all* function).
- iv By entering the *Painting* menu and selecting *restore*, the original image (ie the copy that was not colour corrected) can be recalled in those areas where the 'colour match' is not required.

Alternatively, using the *swap* function, the colour corrected image can be used as the cutout, to be restored through the 'current image', as required.

- v The *restore - finish* function will permanently apply any alterations.

## D RESTORE & MASK

By applying the system's *mask* facilities to either the 'current image' or the 'current cutout' (ie the image to be restored into the 'current image'), a variety of effects can be achieved when applying *restore*.

The density of a *mask* applied to the 'current image' will determine in which areas and to what degree a cutout can be restored through it. A *mask* with a density of 100% is fully opaque and will not allow any cutout image to be restored through it. By reducing the *mask* density, blending effects between the *restore* item (ie the cutout) and the 'current image', can be achieved.

Similarly, where a cutout has *mask* detail stored with it and the *mask* is active in the *restore* menu (ie *mask -use* is selected), the degree to which the cutout is restored will be constrained by the percentage of *mask* applied.

Where the cutout has 100% *mask* added, the *restore* process will not be able to recall any of the cutout detail. With a decrease in the cutout *mask* density, proportionally more of the cutout is accessible in the *restore* process.



*“Library”, “Painting”, “The Pen”, “Palette”.*

# ***Graphic Paintbox 2***

## RGB IN

### Overview

The *RGB in* function offers the ability to create a user defined RGB lookup table (LUT). The *RGB in* menu is found by selecting the *Setup* main menu item and then *luts*.

The RGB LUT is generated by increasing or decreasing the bias of Red, Green or Blue present in the current image and then saving the result to the *Library* under a user defined name. To change the emphasis of one colour, the percentage of the other two colours present in that colour are increased or decreased. To alter red for example, the percentages of blue and green present in the red are altered using positive or negative values. Negative values brighten and positive values darken.

### A CHANGING THE RGB BIAS

The *RGB in* function recalls a grid of menu boxes which are used to build the RGB LUT. To understand these boxes they should be looked at in terms of columns and rows:

Column headings; ie the colour that will be affected by altering any of the green boxes that fall in the line directly below them.

Selected when any alterations to the RGB percentages have been made to generate a lookup table.

Row headings; ie altering a green numeric box in a given row will only affect the colour in the respective column.

After using *build lut*, select *preview* to view the effect of any RGB changes you have made with the new lut. This lut is displayed for as long as *preview* is pressed.

	In Red	In Green	In Blue	
Gamma	1.00	1.00	1.00	build lut
Red	100%	0%	0%	preview lut
Green	0%	100%	0%	
Blue	0%	0%	100%	
	Orig R	Orig G	Orig B	

To find out the percentage change for a given colour (ie red, green or blue) caused by amendments to the value boxes, choose a column heading and then move down to the blue percentage box. These boxes cannot be manually altered but indicate the new percentage of red, green or blue generated by changing the proportion of the other two colours present in that colour.

The 'Original' boxes are used to reset the respective columns to their default values; ie with no change in the red, green or blue percentages or to their *gamma* values.

# Graphic Paintbox 2

The following example gives a brief overview of the main stages involved in increasing the green bias over a given image and then in the next section, saving the RGB changes as a new RGB LUT:

- i In the menu display, move to the column with the title *In green*; ie the colour that we wish to alter.
- ii Move down the *In green* column of boxes until the you reach the green numeric box in the *Red* row.

Tapping on this box will open it, recalling the menu keypad to allow a new red value to be entered; ie this will change the amount of red present in the green separation, wherever green appears in the current image (*Greys* are not affected).

Value changes are usually in the order of 10% to 15%(+ or -), although it is ultimately down to the user's discretion and preference.

- iii To increase the green bias over the image, we need to reduce the amount of red present with a negative value (ie select the '-' function on the keypad so that it appears in the blue keypad display line and then enter a value). The percentage change in green will be seen in the blue information box; ie

Read down the *In green* column to find the parameter changes that have affected the green bias.

Read across the *green* row to the blue information box to find the percentage change in green from its default (ie 100%).

	In Red	In Green	In Blue	
Gamma	1.00	1.00	1.00	build lut
				preview lut
Red	100%	-10%	0%	
Green	0%	110%	0%	
Blue	0%	0%	100%	
	Orig R	Orig G	Orig B	
ce - pic				

- iv To view the result of this change it is necessary to process a new LUT. This is achieved by selecting *build lut*.
- v After a slight delay as the system processes the 'build' information, the LUT can be viewed by selecting *preview lut*. The effect of increasing the green bias can be seen for as long as *preview* is pressed down. Releasing *preview* will revert to the original LUT. By toggling *preview* on and off, a comparison of changes can be made.

**Note:** It is necessary to use the *build lut* and *preview lut* functions each time a change is made to the LUT parameters, to view the effect of those changes.

## B SAVING AND RECALLING A NEW LUT

### i **Saving a LUT:**

When satisfied with any changes, the current LUT (as defined since the last time *build lut* was selected), can be saved to the *Library* for future use by selecting:

*Library - save - name*

Select the blue information box that appears in the menu after *name* is selected (detailing the current type of item to save; ie "image"). Selecting this box will recall options for the type of items that can be saved.

From the boxes offered, select *gpb lut* (the title "gpb lut" will then appear in the blue information box (*see the drawing below*)).

Select *name* once again to recall the menus soft keyboard and type in the LUT name.

Process the *save* by selecting *end*.

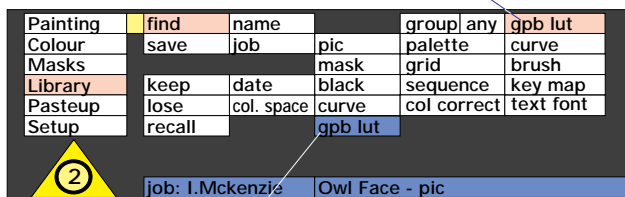
### ii **Recalling a LUT:**

The *Library - find* function is used to recall a LUT from the *Library* and apply it as the current LUT; ie select:

*Library - find - name*

Tap on the blue information box to recall the types of items that can be searched for and select *gpb lut*.

Select gpb lut to recall (save) lookup tables



Information box detailing currently selected type

Tap on the *name* box a second time to recall the soft keyboard and enter the required LUT name and *end*.

Alternatively, select *end* without entering a name, to recall all LUTs stored in the system (**Note:** LUTs can be stored to Magneto Optical disk for archive and backup, if required).

Use the pen to select and load a LUT from the recalled list (If the *Setup - luts - names* function is then selected, the name of the LUT selected can be seen in the table of system LUTs).

# ***Graphic Paintbox 2***



## ROLLER BAR/MENU

### Overview

Roller bars/menus are 'hidden' sub menus which allow a choice of options, depending on the current menu. The lists are hidden because they appear as a single blue menu box (detailing the current choice from the available list), until pressed on with the pen.

Once pressed, a scrolling list box opens up in the menu to reveal the names of available options. The pen is then used to drag up and down through the list to select a new option.

Nine scrolling lists exist:

- i In the *Painting* menu there is a scrolling list of currently loaded *custom* brush names.
- ii In the *Painting* and *Pasteup* menus there is a scrolling list of currently loaded cutouts.
- iii In the *Painting* and *Pasteup* menus there is a scrolling list of cutout 'style' effects which can be applied to a cutout.
- iv In the *Colour - control - photo fx* menu there is a scrolling list of colour effect LUTs, which can be immediately applied to an image.
- v In the *Colour - control - texture* menu there is a scrolling list of texture effects which can be applied to an image.
- vi In the *Library* menu there is a scrolling list of methods by which information in the current *Library - search* buffer can be sorted (**Note:** This is a list of fixed items).
- vii In the *Pasteup - text* menu there is a scrolling list of currently loaded text fonts, or with *map* selected a list of currently loaded font maps.

# ***Graphic Paintbox 2***

## SEQUENCE

### Overview

This allows the recording, editing and replay of a sequence of events entered using the control station (ie all menu selections, hand unit button presses, but not keyboard key presses). This facility can be used to record useful operating sequences which may be used on a regular basis. *Sequences* can be stored in the *Library* and be replayed at will.

A *sequence* can be recorded, then played back at different speeds with or without the menu being displayed on play-back. Other features include the ability to rewind and shuttle backwards and forwards through a *sequence* frame by frame, to set tags and remove unwanted *sequences* and to set cue points for controlled play-back.

The recording, editing and replay of *sequences* is controlled from the menu system, from the number keys on the external keyboard and by using the buttons on the Hand Unit.

### A MAKING A SEQUENCE

The process of producing a sequence is as follows:

- i Select *sequence* from the *Setup* menu.  
This assigns recording and editing functions to the top row of keys on the external keyboard and displays the menu.
- ii Press the *record* box and the system will record all your subsequent actions.
- iii Pressing *stop* ends the recording and therefore the *sequence*.

Once a *sequence* has been recorded, selecting *replay* will prompt the system to playout the actions recorded, while *rewind* will jump back to the first operation in the sequence.

# Graphic Paintbox 2

## B EDITING A SEQUENCE

To edit a *sequence*, first de-select *faster*, select *shuttle* then *rewind*. This will place the cursor at the start of the *sequence*.

The Hand Unit thumb switch can be used to control the cursor and therefore move between each point in a sequence. Pressing right on the thumb switch for example, will move forward through the *sequence*. Pressing left will move backwards and pulling down to the left or right will move slower through the events.

To delete a point or 'event' in a *sequence*, select *set tag* at the start of the section to be deleted. Press *delete* at the end of the section and that section will then be removed.

To insert a fresh element into a *sequence*, press *insert* at the desired point and perform the desired operation and then press *stop*.

## C INSERTING CUE POINTS

If necessary the replay of *sequences* can be cued; ie the replay can of a sequence can be paused at a manually determined point and will not continue until the keyboard space bar has been pressed to complete the sequence payout.

Use *shuttle* to select a point and which a cue is to be inserted and then press *ins cue*. On replay, the *sequence* will stop at this point and wait for the keyboard space bar to be pressed before proceeding.

If necessary, more than cue point can be inserted in a given *sequence*.

## STATISTICS

### Overview

The 'statistics bar' is a single line of menu display which is shown at the bottom of the screen when the main menu or palette has been swiped off screen (regardless of whether the menu is displayed at the top or bottom of the screen).

The 'statistics bar' provides information which is for reference only, detailing for example the X and Y positions of the cursor.

### A GENERAL OPERATION

The *statistics* function can be enabled or disabled from the *Setup - artist* menu.

When operating with the menu displayed, any green numeric box may be selected (turning it pink to indicate its selection), and values then adjusted.

*Statistics* are displayed in the units selected under *Setup - job*, with angles expressed in degrees (*see "Jobs & Page Setup"*).

When constructing a graphic such as a line, circle, ellipse or rectangle with *statistics* turned on, the numbers defining the graphic are shown at the bottom of the screen when the menu has been swiped off.

The displays show the values in a format as follows:

Lines	x origin	y origin	x end	y end
Lines (radial)	x fix	y fix	length	angle
Rectangles	x origin	y origin	x length	y length
Circles	x centre	y centre	radius	
Circles (tangential)	x fix	y fix	radius	angle
Ellipses	x centre	y centre	x radius	y radius
Ellipses (tangential)	x fix	y fix	x radius	y radius

\* With ellipses (tangential), operating with the menu up, the *ang* (angle) box allows the ellipses to be rotated about the 'fix' point.

# Graphic Paintbox 2

## B     SETUP GRID

The *sub - grid* function also makes use of the *statistics* bar with the menu swiped off:

x origin	y origin	x length	y length
----------	----------	----------	----------



*See also: Graphics, Grids.*

## SWAP

### Overview

The *swap* function is used to alternate between the 'current image' and the 'current cutout', to enable simple and effective manipulation of images whether for retouching or creative work.

When a picture is loaded from the *Library* with *new bgnd* turned off, it is placed in the *swap* store. From there, the image can be activated as a cutout by selecting *cutout* from the *Pasteup* menu or be used as an image to 'restored' through the 'current image'.

One application of the *swap* function is to provide a faster means of recalling a copy of the 'current image' than the temporary buffer *save - pic, load - pic* functions, to be used if problems arise with the image being manipulated. A duplicate of the image is first generated using the *cut - all* functions before processing begins. If a problem arises the *swap* function will then recall the original image as the 'current image'.

### Operation

The *swap* function will exchange the 'current image' with the 'current cutout' every time it is selected.

To identify the 'current image' (ie whether it is the original or the cutout) the blue status bars at the base of the screen will update each time the *swap* box is selected. Therefore the *job name*, the *image name*, the size and resolution will all change as the 'current image' changes. The *swap* box will also highlight in pink to show that it is active.

If a cutout with no name is selected as the 'current image', then the status bars will state "No job name" and "CUTOUT - no file".

When a cutout has been manipulated (eg the size or transparency has been altered) swapping between the 'current image' and the cutout will apply the same changes to the new cutout; ie it will appear in the same position, with the same alterations as made to the previous cutout (now the 'current image'). The *cutout* which becomes the 'current image' will be restored to its original dimensions and aspect.

The *swap* function is always available in the main menu.

# Graphic Paintbox 2

## A EXAMPLE 1

A cutout can be colour corrected and retouched before it is committed (stuck) to the 'current image', as follows:

- i The main image (the 'current image') is called in with the *new bgnd* function.
- ii The *cutout* is called in from the *Library* or created using the *cut* or *cut all* functions.
- iii By selecting the *swap* function, the *cutout* becomes the 'current image' and the 'current image' becomes the *cutout*.
- iv The *Colour* menu is entered to amend the *cutout* (now being used as the main or 'current image').
- v When the *Colour* correction has been applied, *swap* is selected again, to return the two images to their original status; ie the *cutout* is working as the cutout and the 'current image' is the main image.

The *swap* function, used as above, would prove useful in a situation where for example the *cutout*, once pasted or stuck down, overwrites or obscures an object to which the cutout must be colour matched. The *swap* function helps to alternate the images and so apply corrections from different menus, as required, to either the cutout or the 'current image'.

## B EXAMPLE 2

The *swap* box can be used as a quick save function, to make a duplicate of the current picture (when used in combination with the *cut* - *all* functions), to be recalled and used as the 'current image' if problems should arise with the image being manipulated (for example, if paint is applied to the wrong area of an image):

- i A copy of the current image is made before processing begins by selecting *cut - all*.
- ii Processing then begins, for example painting directly to the image.
- iii Should a problem occur and the original image is required again, *swap* is selected. The duplicate copy becomes the 'current image' and the copy with the mistake becomes a cutout or second image.
- iv Step one should be repeated to overwrite the damaged copy.



*See also: Cutouts, Library, Pasteup, Restore.*



**CHAPTER 6**  
**TOPICS U - Z**

# ***Graphic Paintbox 2***

## USER PREFERENCES

### Overview

There are a number of controls within the system that can be activated or de-activated, depending on the preferences of the person operating the system. These functions will not alter the performance of the system but can be selected as required to suit the task in hand or a preferred method of working.

The principle user preferences are defined within the *Setup - artist* menu and the *Full Page - system* menu (accessed by pressing the currently highlighted main menu item a second time).

#### A THE CURSOR

The cursor is used to identify the current position of the pen over the image, as the pen moves over the Tablet. In the *Setup - artist* menu the *cursor on* function will display the cursor when highlighted (ie pink) and will remove the cursor when de-selected (ie grey).

The cursor is normally left 'on' but in certain operations (such as copying very fine detail from one part of an image to another), it may be preferable to turn the cursor 'off' so that it does not obscure image detail.

#### B CONFIRM FUNCTION

The *confirm* facility is provided for many of the system functions that will perform a permanent change on the 'current item', or where the system set up and configuration will be altered in some way.

The advantage of the *confirm* facility in the *Setup - artist* menu is that it provides a double check on functions that may not be reversible. For example, the *stick* function in the *Painting - graphics* and *Pasteup* menus is a permanent application of the 'current item' to the 'current image' or the 'current cutout' to the 'current image'. Once applied these processes can not be undone.

Some user's may find that after they have become accustomed to the system, that they do not need the *confirm* facility all the time. In this instance, de-selecting *confirm on* in the *Setup - artist* menu will remove this facility.

# Graphic Paintbox 2

## C STATISTICS



“Statistics”.

## D PEN PRESSURE

The pressure sensitive pen is a central tool for all the control and creative aspects of the system. The degree of sensitivity to which the pen responds however, is defined according to user preferences defined in the *Setup - artist* menu.

The *% to draw* and the *% to press* numeric boxes, define the pen pressure at which a stencil is drawn and the pen pressure at which a menu box is activated, respectively. The recommended set-up (1% and 20%) gives the default minimum values. These can be adjusted as required, to a maximum of 90% in both instances.

It should be remembered that continued use of excessive pen pressure will wear the pen nib down and could cause internal damage to the delicate electronics inside.

## E CLOCK

The clock, situated in the top right hand corner of the *Full Page* menu, details the time in hours and minutes, as known by the system. If necessary, the details of this clock can be amended by the user.

The clock is accessed from within the *Full Page - system - time* menu. After selecting *time* new values can be entered into the associated green numeric hours and minutes boxes and then confirmed with the *confirm* box at the base of the menu. After a brief wait, the clock is amended to the new time.

# USER PREFERENCES

## F SCREEN SAVER

On a high resolution screen displaying static images it is advisable to avoid having the same image displayed on the screen for a prolonged period when no processing is being carried out. This is because there is a danger that long term exposure may 'burn out' on the phosphor coated tube of the screen.

One way of avoiding this problem is to have the display change to a black screen whenever the system has not been prompted or 'touched' (either with the pen, Grip or keyboard) for a specified length of time.

The time the system should wait before the 'screen saver' is activated can be entered in the *Setup - artist - screen saver* menu. This time is defined in minutes.

If it is inconvenient to use the *screen saver*, this function can be de-activated, by entering a zero in the *screen saver* 'time' box (ie the associated green numeric box).

To return the screen to normal and reveal the 'current image' when the 'screen saver' has been activated, move the pen into proximity of the Tablet, select a key on the keyboard or press a function on the Grip.

**Note:** It is not advisable to press down on the Tablet when the image can not be seen (ie when the *screen saver* is active), as this could cause an irreversible change to the image.

# ***Graphic Paintbox 2***

# WARP

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## Overview

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*Warp* is found in the *Pasteup* menu. It works directly on a cutout, which can be any size and shape, up to a maximum area of 2880 by 2656 pixels. The *warp* menu provides tools to define a distortion area and the nature of the *warp* distortion itself. *Warp* parameters can be saved and recalled later if required.

*Warp* can be applied either using a standard *warp* curve, recalled from the *Library* and manipulated to suit, or a new curve can be drawn and manipulated on screen to follow the contours of the image. Curves can be resized or reshaped at will. The *warp* effect is applied within a closed curve or horizontally between two open curves.

This section describes the operation of the *warp* functions, outlining the processes involved in creating new curves, using existing curves and editing curves to produce effects. A number of examples are included to give an idea of the sort of results that can be achieved. *Warp* is essentially a freeform tool and the potential effects are limitless.

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## General Operation

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An area on the cutout must be defined before any *warp* distortion can be applied. This can be done either by loading an existing *warp* curve from the *Library* (see *Loading and Saving Curves*), or by creating a new curve (see *Creating a New Curve*). All curves are based on, and manipulated with, nodal points.

Once the initial, or 'source' curve area is defined, the 'destination' configuration, and hence the *warp* distortion, can be created.

When the desired *warp* effect has been achieved, the distorted cutout can be restored through the main image in the *Painting* menu, allowing the *warp* to be used selectively.

# Graphic Paintbox 2

## A SOURCE AND DESTINATION

There are two editing modes available within *warp*. These are the 'source' and 'destination' modes, and are selected using the *dest* menu box:

### i **Source Mode**

This allows changes to be made to the original curve without affecting the distortion. The system is in 'source' mode when the 'destination' box, ie *dest*, is switched off (ie grey). This is indicated in the display area with a yellow curve line.

### ii **Destination Mode**





This is the default mode, with *dest* switched on (ie pink). Once the curve has been drawn (ie closed up), any changes made in *dest* mode will affect the *warp* distortion itself, or destination. This mode is indicated in the display area with a cyan curve line.

## B NODES

The shape of a *warp* curve is based on its nodes (ie points). Both the position and shape of nodes are significant. When creating a curve in freeform mode (*see Creating a New Curve*), the nodes default to a curved, or *round* shape. Boxes are, naturally, created with *linear* nodes. Any node can be switched between these two nodal shapes as required. For example, an ellipse can be created from a rectangular *box* by selecting *round - all*. Individual points can be curved or straightened by selecting *round* or *linear* respectively and tapping on the node.

The colour of a node is used to reflect its status. It can reflect whether a node's destination has altered relative to its source, whether a node is part of a *group*, and also the application of a *net*.

### Types of Warp Nodes:

-  Ordinary, unchanged node (white and red).
-  Modified node (white and green).
-  Net node (red).
-  Grouped node (blue).



## C PROCESSING

If *auto* is selected, all changes will be processed and shown on screen as they are made. The additional processing involved in this will slow down the process of creating a warp distortion, however, so it may be preferable to leave *auto* switched off and use *preview* to process the distortion once the desired effect has been achieved.

**Note:** *Warp* curves are restricted to the cutout area - any part of the curve which exceeds the cutout will not be processed.

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### Creating a New Curve

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A new curve can be produced either as a *box* drawn out between two points or as a freeform curve.

#### A BOX CURVES

A new curve can be quickly created using the *box* function. Select *box* in the menu and tap down on the screen. This is one of the box's corners. Keeping the pen in proximity, the opposite corner is dragged out, producing a rectangle around part of the image.

**Note:** The rectangle produced by *box*, with its *linear* nodes, can be changed to an ellipse using the *round* function - see '*General Operation - Nodes*'.

#### B FREEFORM CURVES

A new curve is produced by tapping down points on the screen to draw out a line. As many nodes as required are positioned within the cutout as a closed area curve. When the curve is being drawn, the line between the nodes will be shown as a dotted line. When the pen is lifted, it will change to a solid line. The colour of the line, dotted or solid, will depend on whether the system is set to 'source' mode (yellow) or 'destination' mode (cyan) - see '*General Operation - Source and Destination*'.

**Note:** Nodes are initially *round* by default, but can be straightened using the *linear* function.

Any number of *warp* curves can be drawn. They can be joined to a another curve's node, or they can exist independently. Additional curves are drawn with *insert* selected; alternatively, *copy* can be used to duplicate existing curves.

*See also* '*Editing Curves - Multiple Curves*'.

# Graphic Paintbox 2

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## Loading and Saving Curves

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Predefined curves can provide a useful shortcut for many *warp* effects, as can reusing curves produced from first principles (see '*Creating a New Curve*', above).

### A    **LOADING**

A selection of curves can be loaded into the *warp* curve buffer. Any curve fetched from the Library will be added to the list of available curves, accessed from the blue curve title box in the *warp* menu. This blue box displays the title of the currently selected (or most recently loaded) *warp* curve. Selecting the curve title recalls the list of available curves; scrolling through the items will allow a new curve to be selected.



See "*Library*", "*Scrolling List*".

Curves can be loaded into the *Pasteup - warp* area by selecting *load*. The newly imported curve will replace any other *warp* parameters already in place.

### B    **ALIGN**

This feature allows a newly imported curve to be *aligned* with, ie centred on, the cutout. Select *align*, then *all* (to confirm the action).

*Align* will affect only the position of the *warp* curve, which may also require resizing (see '*Editing Curves*').

### C    **SAVING**

Curves can be saved in one of two ways:

- 1        Selecting *save* in the *warp* menu will save the currently active curve to both the *warp* curve buffer and the *Library*.
- 2        The currently active curve can also be saved from the *Library* menu by selecting *save - types - warp*. This will save to the *Library* only; to add this curve to the *warp* curve buffer, it must be subsequently loaded.

A curve can be named, or renamed, within the *warp* menu by selecting *title*, which will recall the soft keyboard, allowing a name to be entered.

## D LOSE

*Lose* removes the currently selected curve from the list of available curves, but does not affect the *Library* copy.

## Editing Curves

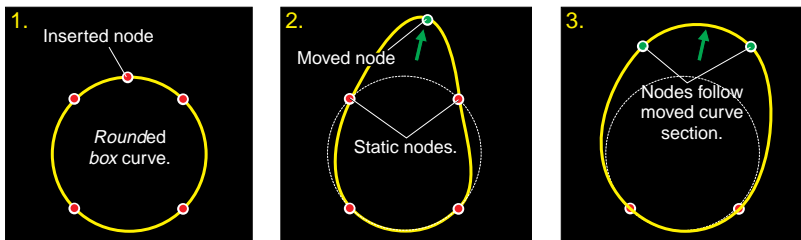
Once a curve has been loaded or created, it can be edited, either to adjust the initial, 'source' configuration, or to create the warping 'destination' configuration. The shape, size and orientation of the curve can all be modified, in either mode.

Curve lines can be straightened or curved by selecting *linear* or *round* respectively and pressing down on a node, or selecting *all* to affect the entire curve.

Larger *warp* distortions may lack detail; this can be fixed using 'rules' or a *net* - see the relevant sections below.

## A INSERTING AND MOVING POINTS

New nodes can be added using the *insert* function. With *insert* highlighted (ie pink), tapping on the curve will allow new nodes to be added. These new nodes can be used to manipulate the shape or to add rules (see '*Rules*', below), which are used to manipulate two points simultaneously.



The diagram above shows how nodes act as static points unless they are deliberately moved. It also illustrates how moving an inserted point and a section of curve can differ in effect. Moving a given node will alter the position of just that node and associated lines; pulling on a section of curve between two nodes will move both of those nodes.

The *horiz* and *vert* boxes can be used to restrict nodal movement to the horizontal or vertical respectively.

# Graphic Paintbox 2

Points can also be removed; selecting *delete* and tapping on a node in the display will remove that node. Tapping on the line between two nodes will *delete* the line and one of those nodes. Selecting *delete - all* in the menu will clear the current *warp* parameters, allowing a new curve set to be created.

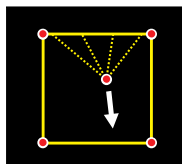
## B RULES AND RULERS

These are lines added to the complete curve, linking one part of the curve to another. 'Rules' are used to help to smooth or stabilise a large *warp* distortion, while 'rulers' are used to manipulate *warp* curves in a linear fashion.

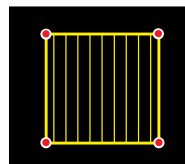
### i Rules

Rules can be used as an alternative to *net*, adding more detail to a *warp* distortion by using more calculations. *Nets* are more extensive and more automatic than rules and will take longer to process.

A set of rules can be added to a curve by pressing down on a curve segment with the *insert* box turned off. Lifting the pen up, but keeping it in proximity, the rules can be snapped onto another curve segment.

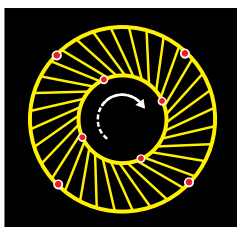


Creating a set of 'rules'.



A 'ruled' box.

**Note:** Rules are also generated automatically by the system if the curve is *copied* with the *size* box on. The act of resizing a copied curve (see '*Multiple Curves*', below) will reveal connecting rules between the two shapes.



As well as aiding smooth *warp* calculation, rules can give a visual reflection of the connection between equivalent points in separate shapes, as can be seen in the illustration (left); here the inner curve has been rotated, visually represented by the position of the nodes and by the stretched rules between the two curves.

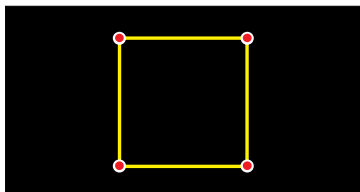
A rules set can be removed from a curve by selecting *delete* in the menu and then tapping on the rules in the display.

### ii Rulers

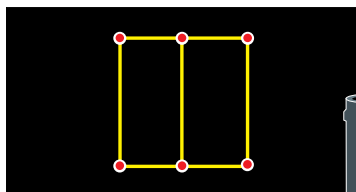
Rulers are added manually with the *insert* function selected. They are used to move two parts of a curve - or parts of two separate curves - as one.

## USING RULERS TO BEND A CUTOUT

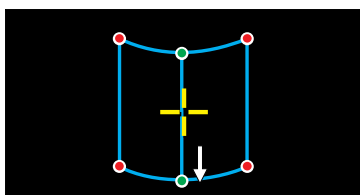
1. Create a *box warp* curve over the part of the cutout that is to be bent or curved.



2. In 'source' mode, select *insert* and *vert* (restricting movement to vertical only), and add a vertical line down the centre of the *warp* curve.

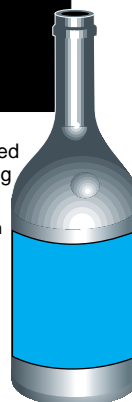
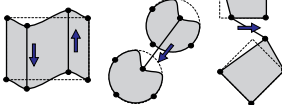


3. Switch to *destination* mode and, with *vert* still selected, move the ruler down.



4. The *warp* shape can be curved round another image, eg creating a label for a bottle etc.

Rulers can be used in any situation where two points are to be moved equivalently.



**Note:** Rulers can interfere with the application of a *net* or *rules*. If additional processing is to be applied, it is recommended that rulers are removed once they have served their purpose. Alternatively, similar effects can be achieved using *group* (see *below*).

## C MOVING WHOLE CURVES

The position of a curve (or section of curve) can only be altered if *angle* and *size* are not selected. Pressing the pen down in the centre of a curve allows it to be moved separately from any other curve present. Pressing down outside of the curve(s) will allow a curve set to be moved. This will encompass all curves present, or, if the *group* box is highlighted (ie pink), a specified *group* of nodes (see '*Group*', *below*).

Selecting the *curve* box (so that it is highlighted in pink) will also allow a curve to be moved by pressing down on any part of it.

**Note:** The *horiz* and *vert* boxes can be used to restrict movement to the horizontal or vertical respectively.

# Graphic Paintbox 2

## D RESIZING

Selecting *size* and then moving the pen in the display area allows curves to be resized. Moving up or right will increase the *size*, while moving down or left will decrease it.

If the current *warp* curve consists of more than one curve, then all curves in the display will be affected unless a specific selection has been made (selection of a curve is described in '*Moving Whole Curves*', *above*).

The *num - scale* function can also be used to adjust the size of curves. This allows exact numerical values to be entered, which can then be applied to all curves selected by selecting the *scale* box.

## E ORIENTATION

Selecting *angle* allows a selected curve, or all curves, to be reorientated. Again, a scrolling action in the display area will increase (up/right) or decrease (down/left) the angle of the curve.

The *num - turn* function allows an exact angle to be specified. Once the required angle has been entered, selecting *turn* will reorientate all currently active curves.

## F GROUP

Selecting *group* allows a number of nodes to be selected for inclusion in a *group* which can be manipulated as one. *Group - all* will select all nodes currently on display. While *group* remains highlighted (ie pink), *delete* can be used to remove nodes from the *group*.

When selected as part of the *group*, a node will turn blue. While *group* is highlighted, the selected nodes can be manipulated together.

To move the grouped nodes, press down outside of the curve or curves and adjust the group's position by dragging the pen. The *group* can be reorientated by modifying *angle*, and *size* will allow the relative distances between the grouped nodes to be altered.

## G NET

This feature affords additional control for high distortion *warps*. In some cases, the required distortion will exceed the *warp* mechanism's ability to keep track of the data. This may result in garbled or broken up image data. *Net* increases the number of warp calculations, thus allowing a higher level of *warp* distortion with a smooth data flow. As a consequence of the additional calculation, the time taken to process a *warp* with a *net* will be longer than without.

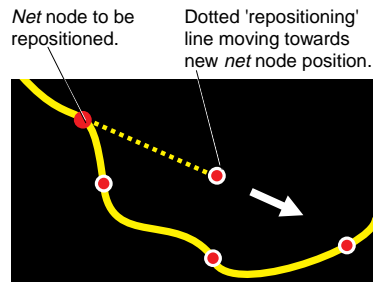
*See also "Warp Mechanism - Net".*

Selecting the *net* box in the menu and then selecting a curve will apply a *net* to that curve. A *net* is shown on the display by an array of small dots within the curve. These dots indicate the area over which the *net* is cast.

Four nodes on the *warp* curve perimeter are selected to improve the interpolation, or averaging, of the distortion. These nodes are shown as solid red dots and are distributed as evenly as possible around the curve.

For best placing of the *net* nodes, *net* should be applied prior to making any *dest* changes. If the *net* nodes are not in the required positions, they can be moved; select *net* and press inside the netted curve. This turns the *net* nodes yellow.

Keeping the pen in proximity, select the *net* node to be repositioned (the *net* nodes will turn red again) and, releasing the pressure, but still in proximity, move the pen over to another node on the curve perimeter. The pen will draw out a dotted line as it moves.



Pressing down on the new node releases the *net* node, which will now have been transferred to the new location.

**Note (1):** The line will 'snap' to any nodes it passes over; this feature can be used to ensure that it terminates correctly.

**Note (2):** Take care not to allow the *net* nodes to cross over; this will confuse the *net* and make it difficult to correct.

A *net* can be removed from a curve by selecting *delete* and tapping in the curve to select it.

# Graphic Paintbox 2

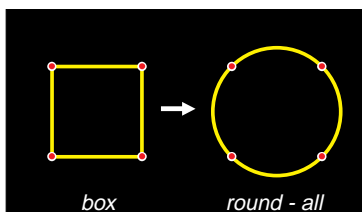
## H MULTIPLE CURVES

While only one set of *warp* parameters can be held in the system at any one time, it is possible for a *warp* distortion to consist of more than one curve. New curves can be added to the *warp* by selecting *insert* and creating a curve as described earlier.

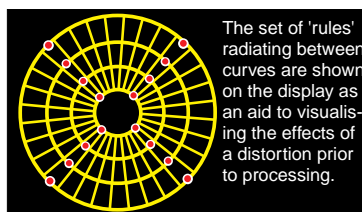
A range of useful effects can be created using the *copy* function, which duplicates existing curves. Select *copy*, and then select a curve to *copy*. The copied curve will, initially share all of the original curve's characteristics, including the 'destination' parameters and the position. Hence it will sit on top of the original curve until moved, resized or otherwise manipulated.

For example, a number of effects can be created with a series of concentric shapes. These are created from a single shape using the *size - copy* function. The creation of two simple effects with concentric curves is illustrated below:

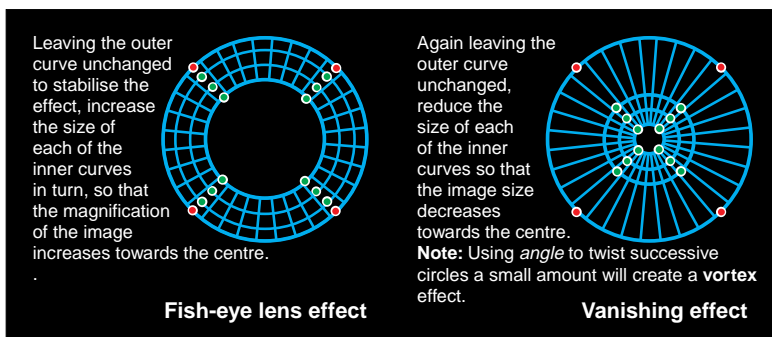
1. Create a round shape by drawing out a *box* and then *rounding* it.



2. Use this shape to create a series of concentric curves in 'source' mode using *size-copy*.



3. Switch to *dest* mode and, with *size* still selected, resize the inner curves:



**Note:** Avoid overlapping curves (ie allowing a smaller curve to overtake its larger cousin in size) while in *dest* mode. Overlapping gives an abrupt 'extruding' effect which may be too harsh for many purposes.



All of the functions available for single *warp* curves are also available for multiple curves. They can be moved, resized (*see above*), twisted (using the *angle* function), and distorted using nodes.

When creating an effect with multiple curves, it is often useful to keep one of the curves (usually the largest, containing, curve) unchanged so that the transition between distorted and undistorted parts of the image is smoother.

The example given above uses copies made in 'source' mode. Copies of a curve can also be made in 'destination' mode; the image data such curves contain will depend on the original 'source' curve.

*See also 'Rules and Rulers', above.*

**Note:** *Warp* curves can also be applied to **multiple layers**; this means that more than one cutout in the *Pasteup* menu can have *warp* curves applied. The *many* cutouts, with their *warp* distortions, cannot, however, be viewed together. Each cutout must be called up separately (using the cutout name roller bar) and the *warps* previewed as required.



*See also "Cutouts"*

## I CORRECTING MISTAKES

Nodes can be *deleted* or *reset* as required. Deleting a node removes it from the *warp* curve, while resetting will undo changes made to a node in 'destination' mode.

A single node is removed by selecting *delete* and tapping on the node. Tapping on the line between two nodes will *delete* the line and one of the nodes. *Delete - all* will clear the current *warp* parameters, allowing a new curve to be created.

Similarly, an individual node can be restored to its 'source' position by selecting *reset* and then the node. Adjacent nodes will be *reset* by tapping on the line between them, and *reset - all* will restore the curve to the 'source' configuration.

**Note:** *Reset* does not affect inserted nodes or *nets*.

# Graphic Paintbox 2

## J NUMERICAL WARP

The *num* function allows exact values to be input for position (*move*), sizing (*scale*), orientation (*turn*) and line division (*divide*). These values can be applied to whole curves or individual nodes, as selected.

All of these functions are applied by first modifying the numerical controls in the menu, then selecting the curve in the display and finally selecting the function box (eg *move*) to apply the parameters.

*Move* and *scale* each have two numerical boxes; this is to allow x and y coordinates to be set. *Turn* allows the angle (measured in degrees) to be set and *divide* will insert the specified number of nodes into the selected curve segment.

## WARP MECHANISM

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### Overview

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It is not necessary to fully understand the way that *warp* works in order to use it, but it may help to have a broad idea for some applications. A brief outline of the methods utilised by *warp* is provided here for those interested.

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### Basics

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*Warp* works on a cutout within an area defined by the pen. This area, the 'source' curve, can be any shape and will often follow the outline of the feature to be distorted. This curve is then modified to create the 'destination' curve. The *warp* algorithm compares these two curves to calculate the distortion of the image data enclosed within the 'source' curve. The image data is then redistributed according to the calculated *warp* distortion.

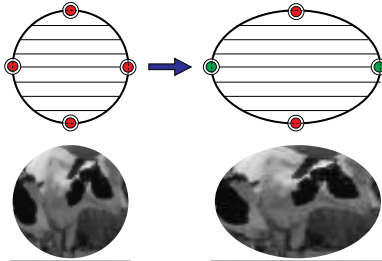
The system bases its *warp* calculations on a pair of 'meshes' which are set up when the curve is first drawn. The term 'mesh' is used here to describe the curve set combined with any rules or *nets*.

One of these initial meshes is assigned to the 'source', the other to the 'destination'. Editing a curve in 'source' mode will modify both meshes; in 'destination' mode, only the 'destination' mesh is changed.

The *warp* algorithm is based on horizontal scan lines. The parts of the scan line between the intersections with the mesh are known as 'spans'. The corresponding spans in the 'source' and 'destination' curves are compared and image data is transferred, suitably resized and rotated, to the 'destination' from the 'source'. Using a rule set or a *net* effectively reduces the size of the spans used in this process, thus increasing the detail seen in the resultant *warp*.

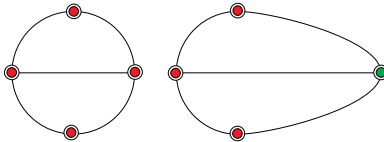
# Graphic Paintbox 2

The effects with a complex shape can be extrapolated from those seen with a simple shape, such as those illustrated. Here, a round shape is drawn and stretched:



The image within the shape will be pulled out with the stretch, according to the direction and magnitude of the stretch. The pixels themselves are not stretched, but the data they contain is interpolated out over a wider area.

Nodes are used on the curve boundary to control which parts of the image within the boundary are stretched. The above example shows an equal stretch to both the left and the right. A different effect could have been achieved by moving only one node. This is seen in the new shape of the curve:



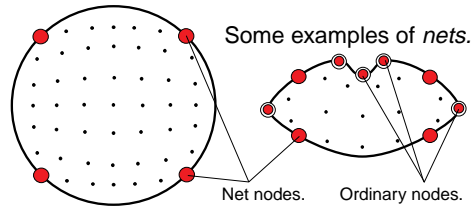
The original shape can be pulled or pushed in any direction. Extra nodes can be added, as required, to allow the shape to be manipulated further.

# WARP MECHANISM

## Net

*Nets* are used to increase the amount of distortion that can be applied to a curve without garbling the image data. They do this using a set of four *net* nodes, which are shown on the screen as solid red points. The *net* nodes' locations are calculated by the *net* function; they will occupy the positions of ordinary nodes (note that it is possible to move a *net* node from one node location to another - see "*Warp - Editing Curves*").

The *net* itself is cast between these four *net* nodes; it is effectively a curved grid generated between the *net* nodes.



The array of dots within a curve shows the approximate locations of the intersections of the *net* grid.

The *net* works in the same way as does the mesh/scan line intersection described under 'Basics'.

# ***Graphic Paintbox 2***

## ZOOM

### Overview

A series of controls located below the 'status square' at the far right of the menu display, allow the user to 'zoom' into or out of the 'current image'. These controls consist of the *roam*, *select* and 'up' and 'down' arrow boxes. Images can be expanded down to the level of individual pixels. It is also possible to operate all functions at these extremely high magnifications.

#### A ROAM

When *roam* is selected, the cursor changes to a small yellow box shape to indicate that the function is active. By pressing and dragging with the pen in the image area, the 'current image' can be moved over the screen, to centre a new area of image. *Roam* is used when 'zooming' into an image, to centre a new section of 'zoomed' image, until the desired area is displayed at the correct magnification. Holding down button 1 on the Grip will enable the *roam* function.

#### B SELECT

With *select* highlighted, moving the pen into the image area will replace the cursor with yellow cross wires. Pressing down on the image will define the first point of the corner of a box which will become the current area of 'zoomed' image. After pressing down once, keep the pen in proximity and drag the cross wires out to define the extent of the area to be displayed, and then press down a second time to process the *select*; ie the area within the box is magnified to fill the current image area. Holding down button 2 on the Grip will enable the *select* function.

#### C ARROW KEYS

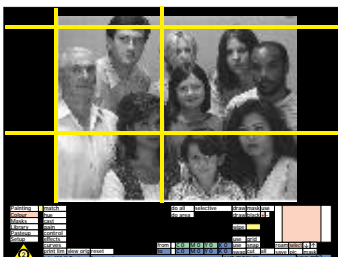
The 'up' and 'down' arrow keys in the menu can be used to respectively 'zoom' into or out of the 'current image'.

As an alternative to using the arrow boxes, pushing up (↑) on the Grip thumb switch will 'zoom' into the 'current image', in steps. Pulling back down on the thumb switch (↓) will reduce the 'zoom', in steps, until the whole of the 'current image' is displayed.

# Graphic Paintbox 2

## D STATUS SQUARE

The 'status square' box represents the 'current image' as a pink or dark grey box over the grey screen area. When 'zooming' into an image, this box will reduce proportionally in size as the number of 'zoom steps' increases; ie the box represents the proportional size of the current area of the 'current image', displayed (*see the diagram below*). The display box is pink when the displayed image is compressed and dark grey when the zoom is 1:1 or greater. The display box can be dragged manually with the pen in the menu area to view a new section of the 'current image'.



1) *select* is used to define an area of the image to 'zoom' into (ie the area within the cross hairs) and so fill the current image area.

The pink section of the 'status square' represents that the area of the current image displayed over the monitor screen.



2) *zoom* is selected to move across a 'zoomed' image; ie to bring a new section of the image into view.

The area of the 'status square' is reduced in size to indicate the proportion of image displayed. Dragging this box with the pen will display a new section of image at the current magnification.



3) The arrow keys can be toggled between to 'zoom' into or out of the current section of image. These functions can also be controlled by the Hand Unit thumb switch (ie pushing up or pulling down).

The 'status square' will amend in size with each 'zoom' operation.

## E RESET

The *reset* function (below the 'status square'), can be selected to return the 'current image' to the full screen size; ie any 'zoom' or *zoom* operation will be cancelled. Alternatively the 'down' arrow can step back to the full image, although any 'zoom' offset will remain.



## GLOSSARY

# ***Graphic Paintbox 2***

# GLOSSARY OF TERMS

## GLOSSARY OF TERMS

Airbrush	This brush type, found in the <i>Painting</i> menu, simulates the effect produced by an airbrush.
Angle	<p>In the <i>Painting</i> menu, this function enables the rotation of <i>custom</i> brush stamps.</p> <p>In the <i>Pasteup - warp</i> menu, it allows a <i>warp</i> curve to be rotated.</p>
Attach	Allows cutouts to be linked together and manipulated in respect of each other, within the <i>Pasteup - 3d</i> menu.
Automask	This function, within the <i>Masks</i> main menu, allows a mask to be created automatically by detecting specific colour and luminance levels in the current image.
Axis	Activates a visual representation of a cutout's x, y and z axis, in <i>Pasteup - 3d</i> .
Black	This refers to the black plane element used as part of the colour process to make up a particular image; ie The K element of a CMYK image. Controls exist within the system to use black as a cutout or mask.
Blur	This softens the selected area to give soft focus effects. The <i>blur</i> function also allows other types of blur effects to be setup: direction ( <i>dir</i> ), symmetrical ( <i>sym</i> ) and <i>streak</i> .
Box Cursor	This is a rectangular cursor used to define a working area of image, or a grid spacing, which appears in certain system menus.
Brightness	<p>A measure of the total amount of light emitted, transmitted or reflected by an item.</p> <p>Scientifically this is measured in Candela (see "Luminance").</p>

# Graphic Paintbox 2

Browse	This allows the contents of the <i>Library</i> to be displayed, 15 items at a time.
Brush	<p>This refers to the style, width and size of pen control when processing the current image.</p> <p>The current style is selected in the <i>Painting</i> menu and the width and size are defined in the palette area or the <i>Painting</i> menu.</p>
Canvas	This is the area of the screen on which the image is displayed and processed.
Cast	<i>Cast</i> refers to a colour that appears on an image due to the type of film stock used, the colour processing or to the scanning process. This <i>cast</i> can be CMY or RGB depending on the type of film or scanning process used.
Chalkbrush	A brush type available in the <i>Painting</i> menu which can be used to simulate the effects of conventional chalk.
CIELAB	This is a colour space derived from the human perception of colour.
Client	<p>This is a tertiary title, used to clarify the position in the digital filing hierarchy after the individual item <i>name</i> and the <i>job</i> name. It is used to collect together <i>jobs</i> and items within groups.</p> <p><i>Client</i> is normally customer specific; ie images grouped under one <i>client</i> name will be for the same customer.</p>
CMYK	<p>Cyan - Magenta - Yellow - Black.</p> <p>This is a colour space that reflects the actual ink dot percentages that would be placed on the paper to reproduce the image. It reflects the use of normal printing inks with their imperfections and the use of black to enhance detail and improve black handling. In addition, values can include the effect of printing controls such as black curve, GCR and UCR.</p>

# GLOSSARY OF TERMS

Colour Curves	<p>The curves are a set of user adjustable look-up tables which define a transform to be applied to each primary colour (additive or subtractive) in the image.</p> <p><i>Colour Curves</i> permits accurate modification and matching of colours at all stages of the design process and controlled colour changes within the image.</p>
Colour Map	<p>This facility can be used to apply the colours currently used in the mixing area of the palette, to the luminance values of the current image. Colours placed in the left hand side of the palette will correspond to low values of luminance.</p>
Colour Space	<p>This defines the method to be used to create or modify colours in image processing and printing. The colour spaces commonly used are RGB, CMYK, HSL and CIElab. Each of these colour spaces have advantages in specific areas of Reprographics and printing, but can also have limitations in other areas, especially image correction and processing.</p> <p>The system operates in a colour space independent environment, but provides the appropriate colour space controls where they are most suitable.</p> <p>The system uses 4-dimensional lookup tables (LUT's) to convert images and colour values from one colour space to another. This provides the maximum system flexibility.</p>
Colour Space Independence	<p>Any image that has been transferred to the Graphic Paintbox 2 system is 'colour space independent' and contains a full spectrum of colours.</p>
Control	<p>Within the <i>Colour</i> menu, <i>control</i> activates a sub-menu of options and various texture/lighting effects.</p>
Corner Pinning	<p>This is the method by which the rectangular extents of a picture or cutout can be positioned by its four corners.</p>

# Graphic Paintbox 2

Chrominance	The colour component of a signal relating to hue and saturation but not luminance (brightness). A colour is a combination of luminance and chrominance. Greys have no chrominance.
Cursor	The cursor is a cross shape symbol (normally displayed in yellow) seen on the screen, indicating the position of the pen over the Tablet.
Custom Brush	This function allows unique brush styles to be created by the user within the <i>Painting</i> menu.
Cutout	This is the term used to describe an area of an image that has been detached ('cut out') and is moveable. Cutouts are defined as pic + mask in the system's <i>Library</i> .
Density	This function allows the pressure-sensitivity of the pen (within the <i>Painting</i> menu) to be varied by the user.
Destination Disk	This is the disk onto which images are transferred when the Manual - Graphic Paintbox 2 to Mac function of the Macintosh GPB 2 application, is used.
Destination Mode	This mode, part of the <i>warp</i> process, allows the distortion to be created by modifying the ultimate or destination configuration of the curve. Curve lines are shown in cyan. Destination, or <i>dest</i> , mode is active when the <i>dest</i> box is selected. <i>See also 'Source Mode', below.</i>
Distortion	A term used to describe the effects of <i>warp</i> .
Dot Gain	'Dot Gain' refers to changes in the half-tone dot size that occur as a result of plate making and printing in the lithographic process. The effect of 'Dot Gain' is to change the colour of the printed material from the intended colour, as the ink is spread further than the source dot size intended.
DPI	Dots Per Inch.
Effects	The <i>Effects</i> menu provides various special processes for creative effects.

# GLOSSARY OF TERMS

File Size	This is the size of a file in terms of the number of bytes of RAM or disk that it takes up.
Filled	A facility in the <i>Painting</i> menu which allows graphic elements to be filled with the current pen colour.
Fonts	This function within the <i>Pasteup</i> menu offers 1,085 true typefaces for use and manipulation, as well as any truetype fonts supplied by the user..
Full Page Menu	This is the system's set-up and configuration menu that is obtained by selecting one of the top-level menus twice (ie <i>Painting</i> , <i>Colour</i> or <i>Library</i> for example).
Gamma	<p><i>Gamma</i> can be defined as a measure of contrast in photographic processing or mathematically, the power law relationship between input and output. Straight through (1:1) relationships have a gamma of 1.0.</p> <p><i>Gamma</i> usually defines the relationship of the output to the input (ie changes in brightness) across the mid-tones. Altering the <i>gamma</i> value changes all of the mid-tone proportionally, about a mid point, with decreasing effect towards the shadows and highlights.</p>
GCR	<p>Grey Component Replacement.</p> <p>This is used when printing a CMY or CMYK image to ensure that black will be correctly printed on the final output page. In theory equal percentages of Cyan, Magenta and Yellow inks (perfect inks) produce a neutral grey tone. In practice, however, they produce brown due to impurities in the inks. The GCR method removes a percentage of grey component from the Cyan, Magenta and Yellow which can be compensated with a black replacement.</p>
Global	Within the <i>Pasteup - 3d</i> menu, this function allows cutouts to be manipulated as a group.

# Graphic Paintbox 2

Glow	This allows the brightness (saturation) of a colour to be altered as the hue is rotated. This compensates for the different colour saturation's at different hue angles due to the constraints of the colour space.
Gradation	The system's gradation facilities allow solid rectangles to be graduated between light and dark.
Graphics	The <i>Painting</i> menu provides graphic facilities which include the ability to generate squares, circles, rectangles and ellipses for example, and to apply those graphic shapes to the current image as themselves or as stencils.
Greys	A term used to describe the luminance tones of an image. The system's greys facilities are provided in the <i>Colour</i> menu.
Grey Component	Represents the amount of cyan, magenta and yellow ink required to produce a grey. The percentage of the three inks varies across the range of brightness.
Grid	The grid facility allows lines, rectangles and circles to be accurately painted upon the screen in the selected grid position, allowing the production of accurate geometric designs.
Grip	This is a hand unit comprising four function buttons, a thumb-switch (joystick) and a trigger (currently not in use) which all offer complementary controls to those available with the menus, pen and keyboard.
Grid Lines	Grid lines can be defined on the screen to allow images and graphic elements to be accurately placed. The grid lines are defined either numerically or manually using the pen, within the <i>Setup - grid</i> menu.
Hicon	<i>Hicon</i> is the process whereby the luminance component of an image is used to generate a mask whose opacity matches the range of luminance values within the image.
Hide	This function allows cutouts to be stacked and hidden from view.



# GLOSSARY OF TERMS

HSL	<p>This is a colour space defined using Hue, Saturation and Luminance.</p> <p>This is an alternative colour space to that of CMYK, RGB, or CIElab. The HSL colour space is very easy to use but can produce illegal (unprintable) colours.</p>
Hue	<p>The <i>hue</i> of a colour is defined using an angle between 0 and 360 degrees.</p> <p><i>Hue</i> is used in conjunction with saturation and luminance (HSL), as an alternative method to CMYK, RGB, or CIElab.</p>
Job Setup	<p>This is defined within the <i>Setup - Job</i> menu, and allows the working page size to be defined.</p>
Job	<p>This is the division used to separate one image or group of images from another.</p> <p>Jobs are normally project or output specific; ie images grouped under one job will be for the same project or will have the same output destination.</p>
Job Name	<p>The identifier used to find and control images grouped under a particular job.</p> <p>A <i>job name</i> can comprise of up to 80 alphanumeric characters.</p>
Keypad	<p>Refers to the menu keyboard which is used as a complement to the physical, external keyboard.</p>
Library	<p>The collective term for the magnetic media used for the storage and retrieval of pictures cutouts and masks, for example.</p>
Light	<p>Allows an immediate light change to be applied to an image (found within <i>Colour - effects</i>).</p>
Lines	<p>The system provides the facility to draw lines, freehand, straight and connected.</p>
LPI	<p>Lines Per Inch.</p>
LPM	<p>Lines Per Millimetre.</p>
Luminance	<p>Defines the level of grey of a colour, using a value between 0 -100 percent.</p>

# Graphic Paintbox 2

	<p>Luminance is used in conjunction with Saturation and Hue (HSL) to define a colour, as an alternative method to CMYK, RGB, or CIElab.</p>
LUT	<p>A Lookup Table (LUT) is a digital processing method which takes an input value at one end and outputs another value which need have no specific mathematical relation to the input.</p>
Magnify	<p>Alters the size of a newly created custom brush, within the <i>Painting</i> menu.</p>
Many	<p>Selected in the cutout menu when multiple cutouts are to be used.</p> <p>An associated numeric box details the total number of cutouts currently loaded.</p>
Mask	<p>This facility, as with traditional graphics design methods, allows masking of selected areas of the image.</p> <p>Processing can take place without affecting the masked area, or by using graduated masks, allow degrees of processing to be performed over the selected image.</p>
Menus	<p>These 'head-up' displays offer the means by which the various system functions are selected.</p> <p>Menus appear at the bottom (or top) of the screen when the pen is swiped across the Tablet.</p> <p>Menu functions highlighted in pink indicate the selected functions.</p> <p>Main menu items are capitalised and sub menu functions are shown in lower case.</p>
Magneto Optical (MO)	<p>Magneto-Optical disk drive with a removable hard disk storage cartridge.</p>
Mix	<p>Offers a second colour pot for use within the <i>Painting</i> menu.</p>
Modulation	<p>Available within the <i>Painting</i> menu (for use with <i>size</i>, <i>density</i>, <i>mix</i> and <i>angle</i>), this function adds a controlled variation equation to the selected effect.</p>

# GLOSSARY OF TERMS

Monochrome	An image printed in a single colour, not necessarily black, but covering all the necessary shades to describe the image fully.
Negative	The inversion of a positive. When applied to images, this term refers to the instance when luminance and chrominance values are inverted to their opposite corresponding value, ie black becomes white (and vice versa) and red becomes green.
Page Grid	The <i>page grid</i> is a set of grid lines that can be used to define the dimensions of an output page, to be used when montaging images. This grid, defined under the <i>Setup - grid - page</i> menu, provides grid lines at margins, columns and gutter for single and double page spreads.
Paint	The default brush type, found in the <i>Painting</i> menu, which simulates an artist's paintbrush.
Palette	The palette area is used to select and mix colours. The palette appears at the bottom of the screen by pressing button 3 on the grip, or if the pen is swiped down, or can appear at the top of the screen if the pen is swiped up.
Pasteup	The <i>Pasteup</i> menu gives access to the <i>3D</i> manipulation, <i>text</i> and <i>warp</i> menus.
Photo fx	This function offers a selection of colour effect LUTs which can be automatically applied to an image.
Pickup	Copies the main image, allowing pixel colours from the copy to be used to paint over the main image.
Picture	This is the term used in the system <i>Library</i> menu to refer to an image.
Pixel	A pixel is one discrete picture (image) element containing a binary value for the image's colour and luminance components, expressed as Red, Green and Blue (or cyan, magenta and yellow) values.

# Graphic Paintbox 2

Positional Grid	An 8 by 6 unit grid, imposed on the 4 by 3 aspect ratio of the monitor screen. All position changes, spins and sizing of cutouts in the <i>Pasteup - 3D</i> menu, are made using these grid values.
Positive	In the context of images, this term is applied to those which emit or reflect light with similar luminance and chrominance values to the original nature of the object or scene represented in the image (See "Negative").
Preferences	These are a series of selections to be made before running the GPB 2 application on a Macintosh.
Priority	Where multiple cutouts are in use, each can be assigned a <i>priority</i> to indicate which cutout will appear in front of or behind any other cutout, when they are together on screen.
Profile brush	This function allows the user to create a unique conical brush shape via the manipulation of a linear graph.
Random	Available within the <i>Painting</i> menu (for use with <i>size</i> , <i>density</i> , <i>mix</i> and <i>angle</i> ), this function adds a random equation to the selected effect.
Read Enable	<p>Indicates that the current disk is accessible to the system to search for data.</p> <p>When a disk is 'read enabled', items such as images, cutouts and masks for example, can be found using the system's 'find' and 'search' functions.</p> <p>Note: To add or delete items from a disk it must be <i>write enabled</i> - See "Write Enable".</p>
Rectangles	The system provides the facility to produce rectangles in solid or in outline, either in defined colours or as masked areas.
Resolution	This is the number of data samples per inch or per millimetre, expressed as DPI or LPM.

# GLOSSARY OF TERMS

Note: 12 LPM is approximately equal to 300 DPI (ie 25.4 mm per inch x 12 lines per millimetre).

Restore	The ability to selectively recall a cutout image through the current image to form a composite image of the two.
Retouching	<p>Retouching is the process of changing the amount or value of colour in any part of an image. Principally, this serves two purposes:</p> <ul style="list-style-type: none"><li>a) To add /delete artefacts to/from a picture.</li><li>b) To adapt colour separations to printing conditions.</li></ul>
Rev Black/Paint	<p>The abbreviation for 'reversible black' &amp; 'reversible paint'.</p> <p>These functions enable black or paint to be manually added to or subtracted from the current image.</p>
RGB	Red, Green and Blue.
RGB In	A sub menu within the <i>Setup - Luts</i> menu that can be used to generate user defined RGB look up tables. These can be saved to the <i>Library</i> and recalled as required.
Roam	<p>Allows the currently viewed section of a magnified image to be manually adjusted.</p> <p>When selected, the cursor changes to a yellow box shape. This can be dragged with the pen to move across the image and pull a new section into the current image area.</p>
Roller Menu/Bar	A scrollable title bar, seen when more than one option is available. This is found in the <i>Painting</i> menu (for brush selection), <i>Pasteup</i> (for <i>photo fx</i> and <i>texture</i> selection), the <i>Colour</i> menu (for cutout selection) and the <i>Pasteup - warp</i> menu (for <i>warp curve</i> selection).
Saturation	This defines the brightness of a colour using values of 0 to 100 percent. Saturation is used in conjunction with Hue and Luminance (HSL), as an alternative method to CMYK, RGB, or CIElab.

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Scaling	Changing the size (of an image or a cutout) ie its dimensions in both the X and Y directions.
Screen Buffer	When a <i>Library</i> search is made, any relevant items that have been found are held in the screen buffer. Entries are displayed fifteen at a time.
SCSI	Small Computer System Interface (standard).
Search Card	This is recalled in the <i>Library</i> menu and can be used to locate stored items by searching for different fields of information held on the card.
Select	Produces yellow cross wires when the pen is in the image area that allow a box area of the current image to be defined. This box area will be magnified to fill the whole of the current image area.
Sequence	<p>Allows a series of pen movements and menu selections to be recorded.</p> <p>This can be used to automate a set of functions, for example. <i>Sequences</i> can be saved to the <i>Library</i> for future use.</p>
Shade	Allows the luminance content of the current image to be altered by applying the luminance of a selected palette colour, while leaving the chrominance (ie colour) content unchanged.
Sharpen	Within the <i>Colour - effects</i> menu, this function offers an impression of sharpening the main image.
Size	Defines the size of the brush in relation to pen pressure, within the <i>Painting</i> menu.
Snap Points	These are the residual points, held within the system during a session, which define the positions of graphic elements that have been stuck down. These snap points can be used to accurately align further elements.

# GLOSSARY OF TERMS

Solid	A facility in the <i>Painting</i> menu that allows rectangular graphic elements to be filled with the current pen colour and a hard (ie 'solid') edge.
Source Mode	This mode, part of the <i>warp</i> process, allows <i>warp</i> curves to be edited without affecting the distortion - effectively, to set the initial conditions for the <i>warp</i> distortion. Curve lines are shown in yellow. The system is in source mode when the destination, or <i>dest</i> , box is deselected (ie white). <i>See also 'Destination Mode', above.</i>
Spacing	Used to increase/decrease the spacing between the each brush stamp of a newly created custom brush.
Spray	Allows the active custom brush to be randomly splattered over a user-defined circular area.
Style	Within the <i>Painting</i> and <i>Pasteup</i> menus, the <i>style</i> box (when selected) will reveal a roller menu containing a number of automatic effects which can be applied to an image.
Subtractive	Coloured pigments (paint or inks), Cyan, Yellow and Magenta when combined with each other in equal proportions produce black
Swap	The control which will exchange the current image with the current cutout and will at the same time replace the current cutout with the current image. This process can be repeated indefinitely.
Temporary Buffer	The temporary buffer is an invisible system store, used for holding one copy each of an image, a mask and a colour set up. These items can be recalled at any time. Loading a new item into the temporary buffer will overwrite any items currently held there.
Texture	Offers a selection of texture LUTs to be automatically applied to an image (found within the <i>Colour - effects</i> menu).

# Graphic Paintbox 2

Thumb Switch	This is the four directional control switch in the middle of the Grip.
Track	Within the <i>Painting</i> menu, <i>track</i> allows the angle of the brush stamp to follow the direction of pen movement.
Warp	Part of the <i>Pasteup</i> menu, this allows a section of a cutout to be manipulated like a piece of rubber, with freeform stretching, twisting, magnification and displacement to create a variety of novel effects.
Warp Curve	Used to control the warp effects, the warp curve is effectively a set of parameters which describe an initial configuration (set in 'Edit mode') and its distorted result.
Wash	Allows the chrominance content (ie the colour content) of the current image, to be 'washed' over with a selected colour loaded onto the end of the pen, leaving the luminance content of the image unchanged.
Wipe	The <i>wipe</i> function is used to cover the current image area with colour deposited in the colour pot recalled with this function. <i>Wipe</i> will permanently overwrite the current image.
Write Protect	<p>When a disk is 'write protected' it is only possible to view items stored on that disk.</p> <p>No modification, amendment, addition or deletion of items is possible until the disk is 'write enabled'.</p>
Zigzag	A control found within the <i>Painting</i> menu (Hand Unit button 4) and the <i>Colour</i> menu, to display the current image as a high contrast image. This is used to check for 'banding' effects, for example.